ANALOG

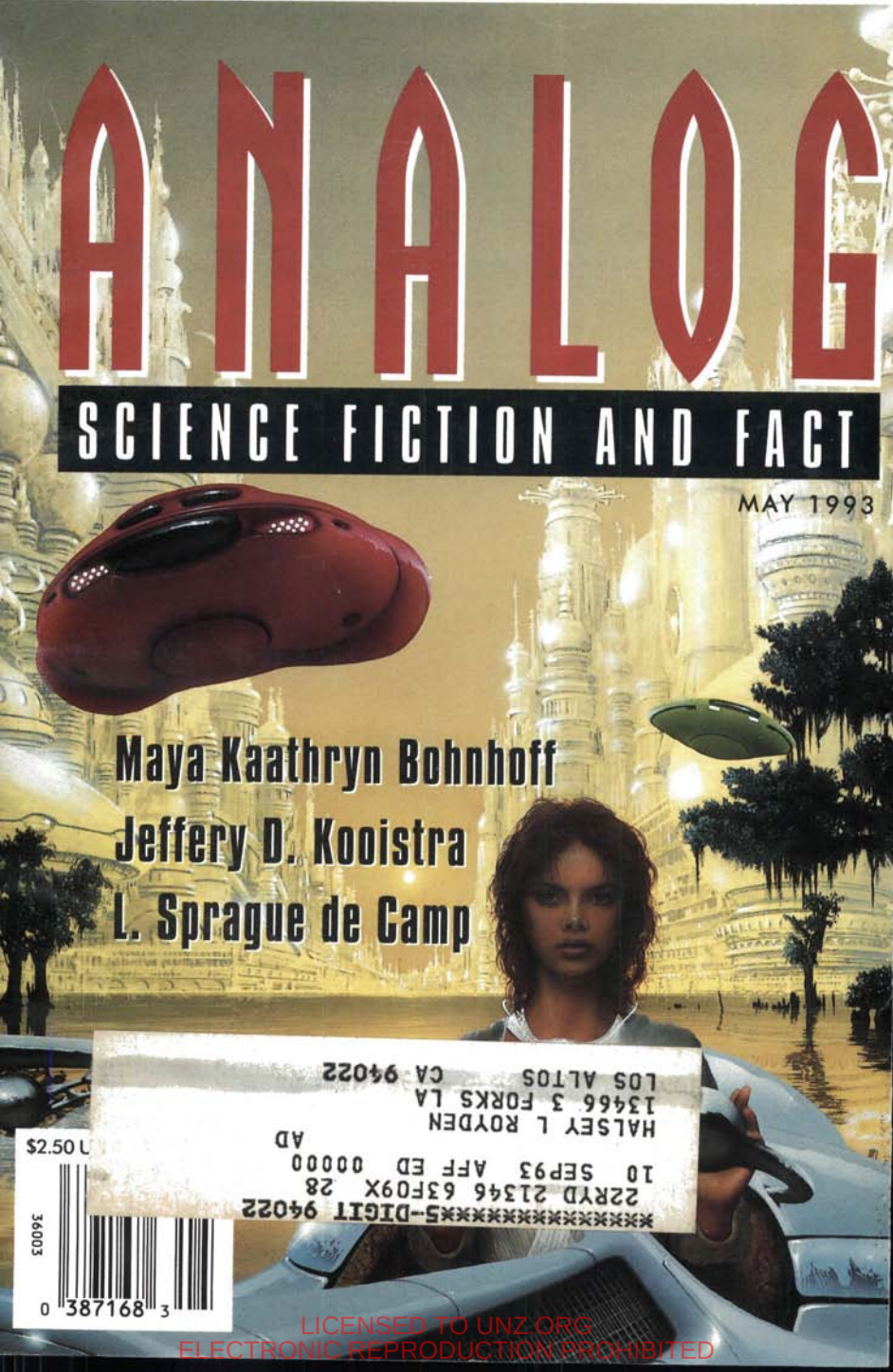
SCIENCE FICTION AND FACT

MAY 1993

Maya Kaathryn Bohnhoff

Jeffery D. Kooistra

L. Sprague de Camp



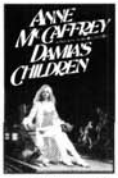
HALSEY L ROYDEN
13466 3 FORKS LA
LOS ALTOS CA 94022

AD
10 SEP93 APF ED 00000
22RYD 21346 63F09X 28
*********5-DIGIT 94022

$2.50 U

36003
0 387168 3

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



8813 $21.95/**$7.98**

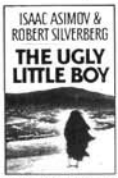
7294 **$7.98x**

8466* $27.95/**$14.98**

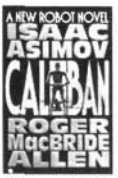
8433 $22.00/**$10.98**

1271+ $20.00/**$9.98**

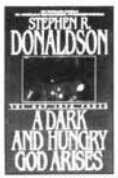
8763++ $18.50/**$7.98**



6429 $22.50/**$7.98**



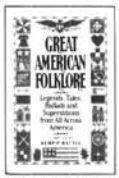
8821 **$8.98x**



8516* $22.00/**$11.98**

4994 **$7.98x**

8839 $22.00/**$10.98**

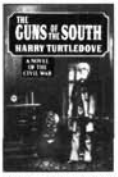


2667 $16.95/**$10.98**

6577 $20.00/**$8.98**

7963 $22.95/**$12.98**

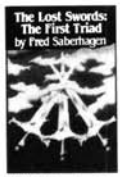
8201* **$11.98x**



8235 $19.00/**$9.98**

6437 $22.95/**$11.98**

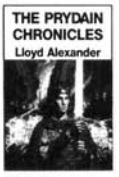
5926 $20.00/**$9.98**



7260 *Woundhealer's Story, Sightblinder's Story, Stonecutter's Story*
$45.85#/**$12.98**

5017 *Farslayer's Story, Coinspinner's Story, Mindsword's Story*
$50.85#/**$13.98**

4747 *So You Want to Be a Wizard, Deep Wizardry, High Wizardry*
$45.85#/**$12.98**



5595 All 5 novels plus *The Foundling & Other Stories*
$83.70#/**$14.98**

7609* *The Book of the Damned, The Book of the Beast*
$39.90#/**$10.98**

8797 *Arrows of the Queen, Arrows' Flight, Arrows' Fall*
$14.98x

HERE'S WHAT YOU GET WHEN YOU JOIN...

A GUARANTEE OF SATISFACTION. Once your membership's accepted, we'll send the 5 BOOKS you've chosen. If you're not 100% satisfied with them, return the books within 10 days *at our expense*. Membership will be canceled and you'll owe nothing.

HUGE DISCOUNTS ON HARDCOVER BOOKS. Save as much as 65% off publishers' hardcover edition prices. Club books are sometimes altered in size to fit special presses.

THE FREE CLUB MAGAZINE. You'll receive up to 16 issues a year. Each issue reviews the Featured Book Selection(s) plus a wide variety of alternate books from the Club's extensive library.

SHOPPING MADE SIMPLE. To get the Featured Book Selection(s), *do nothing*—it will be sent automatically. If you prefer another book—or none at all—simply return your Member Reply Form by the specified date. A shipping and handling charge (and sales tax, where applicable) is added to each order.

AN EASY-TO-MEET OBLIGATION. Take up to 2 years to buy 4 more books at regular low Club prices. Afterwards, you may resign membership anytime.

RISK-FREE RETURN PRIVILEGES. If you get an unwanted book because your Club magazine was delayed and you had less than 10 days to respond, simply return the book *at our expense*.

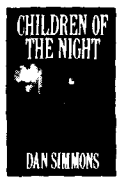
Prices in fine print are publishers' hardcover editions.
Prices in bold print are Club hardcover editions.

* Explicit scenes and/or language
x Hardcover edition exclusively for Club members

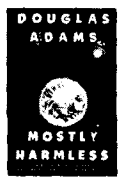
Combined publishers' editions
+ Copyright © 1992 Paramount Pictures. All Rights Reserved. STAR TREK is a Registered Trademark of Paramount Pictures.
++ ® & © 1992 Lucasfilm Ltd. All Rights Reserved. Used Under Authorization.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

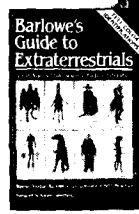
"Son, it's time. *Witch* 5 for $1 do you want for joining now?"



8169*$21.95/**$10.98**



7302 $20.00/**$6.98**



6916 **$12.98x**

0752 *Elric of Melnibone, The Sailor on the Seas of Fate, The Weird of the White Wolf*
$9.98x

1172 *The Vanishing Tower, The Bane of the Black Sword, Stormbringer*
$10.98x

8805 *Red Dwarf: Infinity Welcomes Careful Drivers: Better Than Life*
$10.98x

Choose any 5 for $1 with membership

THE Science Fiction BOOK CLUB®

MAIL TO: *The Science Fiction Book Club*
6550 East 30th Street, P.O. Box 6367
Indianapolis, IN 46206-6367

Please write book numbers here:

YES! Please enroll me in *The Science Fiction Book Club* according to the risk-free membership plan described in this ad. Send me the 5 BOOKS I've indicated. Bill me just $1, plus shipping and handling.

SAVE MORE—BUY YOUR FIRST BOOK NOW FOR $2.98 (write book number)
☐ Send me the book I've indicated and reduce my commitment to only 3 more books. Bill me an additional $2.98, plus shipping and handling.
38199 33

38200 31

Mr./Mrs.
Miss/Ms. _____
(please print)
Address _____ Apt. _____
City _____ State _____ Zip _____
If you're under 18, your parent must sign here _____

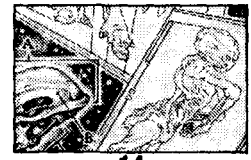
Members accepted in U.S.A. and Canada only. Canadian members serviced from Canada, where offer is slightly different. Sales tax added where applicable. We reserve the right to reject any application.

ANA 5/93

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

86

ANALOG



14

114

Vol. CXIII No. 6
May 1993

Next Issue on Sale
April 27, 1993

Novelettes
SUNSHINE, GENIUS, AND RUST, Jeffery D. Kooistra ____ **14**
THE MISLAID MASTODON, L. Sprague de Camp ____ **54**
A TEAR IN THE MIND'S EYE, Maya Kaathryn Bohnhoff ____ **134**

Science Fact
IS AIDS AN AUTOIMMUNE DISEASE?, Dr. J. Kevin Steele ____ **76**

Short Stories
FOOL'S ERRAND, Sarah Zettel ____ **86**
SOME CHOICES, Mark Rich ____ **100**
WHITE ROOM, Stephen L. Burns ____ **114**

Reader's Departments
THE EDITOR'S PAGE ____ **4**
IN TIMES TO COME ____ **75**
THE ALTERNATE VIEW, G. Harry Stine ____ **109**
THE REFERENCE LIBRARY, Tom Easton ____ **131**
BRASS TACKS ____ **169**
UPCOMING EVENTS, Anthony Lewis ____ **176**

Cover by Jim Burns

Christoph Haas-Heye
President and Publisher

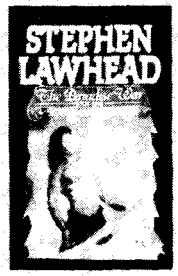
Stanley Schmidt
Editor

Tina Lee
Managing Editor

Terri Czeczko
Art Director

Indicia on page 5

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



THE PARADISE WAR, BOOK 1 OF SONG OF ALBION
by Stephen R. Lawhead

Lawhead, author of the bestselling Pendragon Cycle, spins an enchanting tale of an Otherworld from Celtic history, and the legendary Song of Albion that keeps both worlds intact. The first in an exciting new trilogy.
"A splendid tale of action and excitement."
— Madeleine L'Engle, author of *A Wrinkle in Time*

THE THREAD THAT BINDS THE BONES
by Nina Kiriki Hoffman

A beautifully written contemporary fantasy about a family whose ominous powers threaten to consume them. The first novel by a noted short story writer who has been called "one of those special prizes in the field" by *Locus* magazine.

THE PURE COLD LIGHT
by Gregory Frost

A dark but hopeful vision of a world dominated by mega-corporations and threatened by endemic corruption and a drug whose powers of alteration are terrifyingly broad.

MASTER OF EARTH AND WATER
by Diana L. Paxson and Adrienne Martine-Barnes

Diana Paxson, who has given us new views of Tristan and Iseult and of King Lear and his children, combines her talents with those of Adrienne Martine-Barnes, a specialist in Celtic mythologies, to portray one of the most famous characters of Irish legend, Finn MacCool.

An Avonova Book/William Morrow Hardcover

COMING IN MAY 1993

AVONOVA

AVON BOOKS
The Hearst Corporation

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

EDITORIAL Stanley Schmidt

TEST-DRIVING THE FUTURE

Two or three years ago, while sitting in a car wrestling with one of those big city maps crammed with tiny type and folded along innumerable creases, it occurred to me that this traditional ordeal should soon become unnecessary. The know-how already existed to provide a car with an onboard computer that could store all the information on that map electronically, and display the currently relevant parts of it on a dashboard screen. Simple controls could let the driver shift the display to the part he or she needed, without the rest being spread out all over the car's interior and occupants, and zoom in or out to whatever scale was most useful.

That much seemed so obvious and inevitable that I asked a professional programmer how soon such a system might be available. He was not actually working in that area, but ventured a guess of ten years.

Within six months, I saw a newspaper story about a company that expected to be marketing such a system within a year or two, at a price on the order of $3,000.

And within a couple of years of my original inquiry—and my consultant's ten-year guesstimate—I found myself test-driving a system that did everything I've described, and a lot more.

It's a good illustration of how hard it is to predict the rate of development of such things, even for somebody working in a closely related area. A good general principle seems to be that if it's going to happen at all, it will happen a lot faster than almost anybody thinks!

Since this particular instance —computer-aided navigation of automobiles—is a theme long familiar in some form to science fiction readers, I thought you might be interested in a personal report from somebody who's experienced an early version of the real thing.

It began when Joyce and I arrived in Orlando, Florida, for MagiCon, the 50th World Science Fiction Conven-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tion (though we had had some prior instruction in what to expect). Our rental car was one of 100 specially equipped Oldsmobile Toronados being test-driven by selected AAA members. It was always easy to spot in a parking lot, and a frequent conversation starter—that special equipment included a bump on the right rear fender that looked like nothing we'd ever seen on a car before.

Inside, it looked pretty normal, except for the computer monitor mounted where radio and air-conditioning controls would normally be, and several extra buttons on the steering wheel with cryptic inscriptions like "Hop Right," "Swap Map," and "Where Am I?" The computer screen incorporated the controls you'd normally expect to find in its location, mostly as touch-screen "buttons." But those were the least interesting things it did.

The computer started booting up as soon as we lifted the door handle to get in. A short time later, by pushing a NAVIG button next to the screen, we had an onscreen menu with such options as ENTER DESTINATION, SERVICES/ATTRACTIONS, MAP OF LOCAL AREA, and EMERGENCY. Since we already had a hotel reservation, we used the onscreen buttons to choose SERVICES/ATTRACTIONS. That called up a new menu from which we chose WHERE TO STAY. From that one we chose a list of hotels, on which we found ours in a few seconds.

Since we expected that hotel to be a frequent destination, we accepted the computer's offer to add it to a list of SAVED DESTINATIONS that could be called up more directly. The computer then offered to plan a route there, according to our preference for FASTEST, NO INTERSTATES, or NO TOLL ROADS. We punched FASTEST, and a few seconds later the screen showed a map, rather like the one I had originally guessed should soon be feasible.

But not *just* a map. This one showed the present position and orientation of our car with an arrow, and our destination with a star. The streets the computer recommended we use to get from here to there were shown as bold lines.

When we actually began driving, the display changed to a different map, called a guidance display, showing only our immediate neighborhood, including the car's present position and its next turn. A synthesized

Analog Science Fiction and Fact (Astounding) is published every 28 days which includes special issues in January and July by Dell Magazines, a division of Bantam Doubleday Dell Magazines, at $2.50 a copy in U.S.A., $3.25 in Canada. 1 year subscription for $34.95 in the U.S.A. and possessions, in all other countries, $40.50 (GST included in Canada, GST #123054108) payable in advance in U.S. funds. First copy of new subscription will be mailed within eight weeks of receipt of order. When reporting change of address allow 6 to 8 weeks and give new address as well as the old address as it appears on the last label. Second-class postage paid at New York, NY, and at additional mailing office. Canadian 3rd class postage paid at Windsor, Ontario. © 1993 by Bantam Doubleday Dell Magazines, all rights reserved. Protection secured under the Universal Copyright Convention. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental. Printed in U.S.A. All submissions must be accompanied by stamped self-addressed envelope; the publisher assumes no responsibility for unsolicited manuscripts or artwork.

POSTMASTER: Send to ANALOG SCIENCE FICTION AND FACT (ASTOUNDING)
P.O. BOX 7061, Red Oak, IA 51591
IN CANADA RETURN TO 3255 WYANDOTTE STREET, EAST WINDSOR, ONT. CANADA N8Y 1E9
Editorial and Advertising: Analog Science Fiction and Fact, 1540 Broadway, New York, NY 10036
Subscriptions: Analog Science Fiction and Fact, P.O. Box 7061, Red Oak, IA 51591.ISSN 1059-2113

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

voice (which several passengers thought sounded Swedish) said, "Start by going west on the Bee Line Expressway." Captions on the screen gave us a running account of the distance to our next turn, as well as the distance and estimated time to our final destination.

As we got close to each turn, the voice told us exactly how to make it. Until then, all we had to do was keep doing what we were doing. When we completed each turn, the screen changed to another guidance display, showing the same information about our present location and next turn.

And almost before we knew it, our hotel was looming in front of us and the synthesized voice was saying, "You are in the vicinity of your destination. TravTek guidance completed."

It could do that sort of thing for any destination within approximately 35 miles of Orlando. Or, if we didn't have a particular destination in mind, we could simply drive, and use the onscreen maps—complete with zoom capability—to keep track of where we were.

With or without a definite destination, the system offered lots of other options, many of which we tried out in the ensuing days. If we had not had a hotel reservation when we arrived, for example, it could have helped us select one—either by scanning through its extensive listing, with descriptions, or by our telling it what features were important to us, such as price range or the presence of a swimming pool. Once we picked one,

STANLEY SCHMIDT ..... Editor
TINA LEE ..... Managing Editor
IAN RANDAL STROCK ..... Associate Editor
SCOTT L. TOWNER ..... Assistant Editor
JEAN TRAINA ..... Design Director
TERRI CZECZKO ..... Art Director
ANTHONY BARI ..... Junior Designer
MARILYN ROBERTS . Senior Production Manager
CAROLE DIXON ..... Production Manager
CYNTHIA MANSON ..... Director of Marketing and Subsidiary Rights
CONSTANCE SCARBOROUGH ..... Contracts Manager
BARBARA PARROTT ..... Director of Newsstand Circulation
BRUCE SCHWARTZ ..... Director of Circulation Subscription Sales
DENNIS JONES ..... Operations Manager Subscription Sales
DAVID MENDELSON . Renewal & Billing Manager Subscription Sales
FRED SABLOFF ..... Advertising Sales Director
JUDY DORMAN ..... Assistant Advertising Sales Manager

Published since 1930

CHRISTOPH HAAS-HEYE
President and Publisher
Dell Magazines

JACK HOEFT
President and CEO
Bantam Doubleday Dell Publishing Group, Inc.

ADVERTISING OFFICES
NEW YORK
(212) 856-6306

ADVERTISING REPRESENTATIVE
Dresner Direct, Inc., N.Y., N.Y.
(212) 889-1078

First issue of *Astounding* January 1930 ©

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

news from Questar

ALAN DEAN FOSTER
AUTHOR OF THE NEW YORK TIMES BESTSELLING SPELLSINGER SERIES!
SON OF SPELLSINGER
He's over his head in trouble and magic—
But Jon-Tom's spellrapping son too legit

SON OF SPELLSINGER
by Alan Dean Foster Cover art by Tim Hildebrandt
0-446-36257-3/$5.50 (In Canada: $6.99)

GET READY FOR A NEW GENERATION OF MAGIC, MAYHEM, AND ...RAP MUSIC?

Yo! Listen up! The first Spell-singer adventure in six years is finally here—and whether he's spellsinging or spell-rapping, the Spellsinger's son is too legit to quit!

Sf and fantasy master Alan Dean Foster delivers a long-awaited addition to his *New York Times* bestselling Spell-singer series—SON OF SPELLSINGER, a wild, pulse-pounding, hip-hopping fantasy adventure! Rather than become a spellsinger like his father, teenage Buncan decides to do his own thing, and puts together a band that features rap music and creates magic with wildly unpredictable results. But it is Buncan and his rapping band who ultimately possess the power to battle the sinister Grand Veritable—for the future of the entire planet!

ALSO READ:

Spellsinger 0-446-35647-6/$4.95 (In Canada: $5.95)
Spellsinger II: The Hour of the Gate 0-446-35650-6/$4.95 (In Canada: $5.95)
Spellsinger III: The Day of the Dissonance 0-446-34363-3/$3.95 (In Canada: $4.95)
Spellsinger IV: The Moment of the Magician 0-446-35348-5/$3.95 (In Canada: $4.95)
Spellsinger V: The Paths of the Perambulator 0-446-32679-8/$3.50 (In Canada: $4.50)
Spellsinger VI: The Time of the Transference 0-446-30009-8/$3.50 (In Canada :$4.50)

AVAILABLE AT BOOKSTORES EVERYWHERE WARNER BOOKS

A Time Warner Company Questar is a trademark of Warner Books, Inc. ©1993 Warner Books, Inc.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

it would automatically dial its phone number at the touch of a button, so we could make a reservation with the cellular phone. It could provide similar help with selecting and locating restaurants and other services.

If we'd wanted to go to a private home, we could have gotten instructions by giving its street address. If we took a wrong turn, through either the system's error or our own, it would tell us we were off course and offer to plan a new route. Using updates from emergency vehicles and police reports, it would warn us of traffic congestion and delays or road closures due to construction or accidents. In those cases, too, it would offer to provide alternate directions. If anyone found the voice directions annoying, they could be turned off. If we had difficulties understanding or using the system, it provided both on-screen help and free calls to a HELP desk at headquarters.

How well did it work? In general, very—well enough that I can say without hesitation that this was the easiest and most relaxed driving I've ever done in an unfamiliar city. I seldom even carried a paper map, and I always got where I was going (with one exception that I'll mention later). I didn't feel the usual obligation to scrutinize every passing street sign and landmark, and try to remember how it fit into my overall route. An occasional spot check—noticing something easy and obvious to confirm that reality matched the screen—was enough. I didn't need to worry about missing turns, because even if it happened, the system would tell me how to correct the error in its usual easy way: one turn at a time.

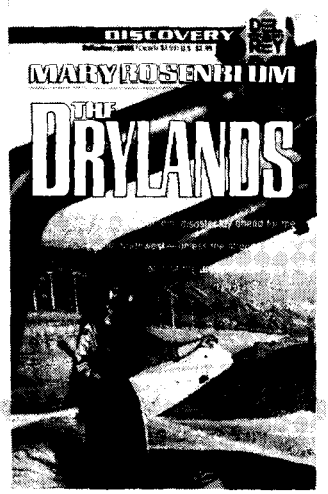
It *did* happen, on rare occasions. This is, after all, an experimental prototype, and couldn't be expected to be perfect. The car sometimes seemed to lose track of where it was, for example, after extensive driving around in a large parking lot, and in at least one case this threw the "distance to turn" calibration off enough to make us miss a turn. But once we accepted new route instructions and made a turn that the computer recognized, everything got back to normal.

The only sizable problem we had was at the very end of the trip, when we had been well outside the area the system "knows" for several days. I'm not as familiar as I'd like to be with the detailed workings of the system, but as I understand it, it keeps track of turns and accelerations to determine where the car is at any time. Small errors can accumulate in that process, so when the car is in its fully operational area around Orlando, it periodically corrects its position information by comparing it with data from traffic signal monitors and highway surveillance systems. Outside that area, it can't make those corrections. So it wasn't surprising that it knew when we reentered its "home area," but didn't have an accurate idea of where we were in it.

That was the only time we actually called the HELP desk, hoping to get our location corrected. It turned out (to our surprise) that the expressway rest area we called from was not one of the reference points that was stored for that purpose. Since we had

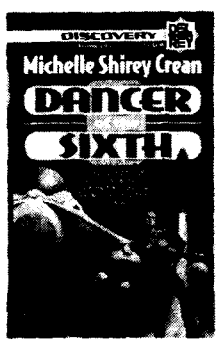
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

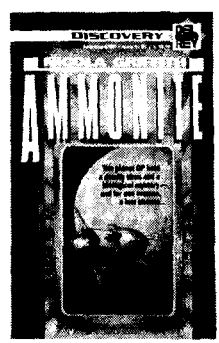
Have you discovered Del Rey Discoveries?

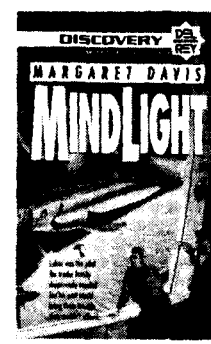


A science fiction find—the first novel by the author of this month's *Asimov's Science Fiction* story, "Stairway"!

DEL REY DISCOVERY







#1 in Science Fiction and Fantasy DEL REY Published by Ballantine Books

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a plane to catch, and knew generally how to get to the airport without computer directions, we decided not to risk the extra time to go to a location from which the HELP desk could have got us back on track. But if we'd had the time and chosen to spend it, the problem could easily have been fixed.

The particular experiment in which we participated was called TravTek, and it ran from February 1992 through January 1993. It was a joint venture of the American Automobile Association, the city of Orlando, the Federal Highway Administration, the Florida Department of Transportation, Avis Rent a Car, and General Motors, with important contributions from too many other companies and agencies to list here.

TravTek is only one of several such projects underway, both in this country and abroad. You'll find several of them described in the article "The Case for Smart Highways," by Moshe Ben-Akiva, David Bernstein, Anthony Hotz, Haris Koutsopoulos, and Joseph Sussman (all of MIT), in the July 1992 issue of *Technology Review*. That article also discusses, at more length than I can here, why civil engineers and city managers around the world are very interested in the development of Intelligent Vehicle/Highway Systems, or IVHS, like TravTek.

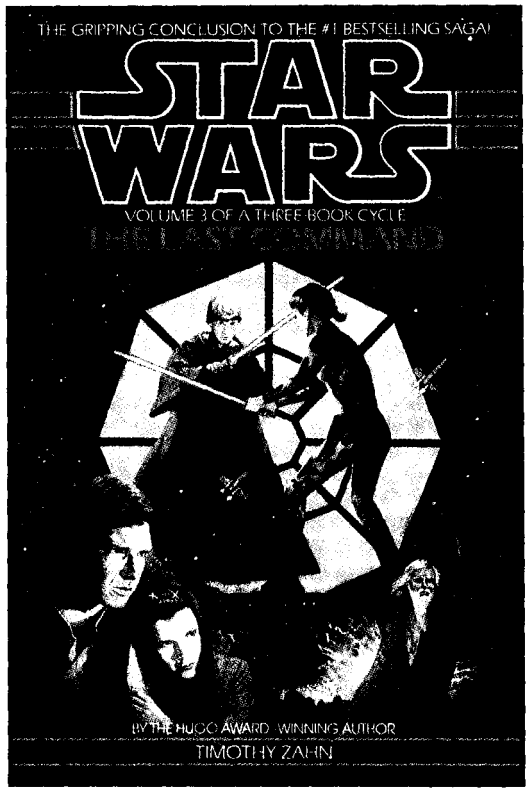
From their point of view, such systems will be needed to make automobile travel safer and less wasteful—of energy, time, and human productivity. They should do that in ways that will also appeal to individual drivers. On the basis of my own experience, they should be particularly useful both to renters of cars in unfamiliar cities, and to regular commuters in areas where traffic congestion is often a serious problem. They should also be valuable, even close to home, for people like salesmen, delivery truck drivers, and freelance musicians who often have to find unfamiliar addresses.

There are, of course, plenty of questions that need to be asked—and answered—before such systems become widespread. The *Technology Review* article addresses a wide range of these; I'll mention only a few. Privacy is an obvious concern. TravTek's central computer always knew where we were, at least when we were in its operating zone around Orlando. At the time, we didn't mind; but there are plenty of reasons, some quite legitimate, why people might not want anyone else continually monitoring their comings and goings.

It seems to me that any such system, to be salable in a non-experimental context, will have to include some provision for turning it off—so completely that no one else knows a car's whereabouts until its driver chooses to "reconnect" with the system. Is there a danger of governments, too enamored of the efficiency such systems might provide, making their use compulsory at all times (much as pilots in controlled airspace must now always maintain contact with a controller)? Might that danger be offset by designing systems that gather and provide useful information to drivers without monitoring them individually?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE LONG-AWAITED CONCLUSION TO THE THRILLING THREE-BOOK CYCLE


THE GRIPPING CONCLUSION TO THE #1 BESTSELLING SAGA!
STAR WARS
VOLUME 3 OF A THREE-BOOK CYCLE
BY THE HUGO AWARD WINNING AUTHOR
TIMOTHY ZAHN

384 pp.
$21.50 /
$26.50 C

Heir to the Empire and *Dark Force Rising* captivated millions and became #1 national bestsellers. Now Luke, Leia, and Han mount a desperate last stand against Grand Admiral Thrawn and his deadly army of clone soldiers, as Timothy Zahn's epic three-book adventure draws to a dazzling conclusion!

® and © 1993 Lucasfilm Ltd. All rights reserved. Used under authorization.

BANTAM SPECTRA

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The *Technology Review* article mentions concern about "how drivers might behave in this new, information-rich transportation environment" and how they will "respond to the outpouring of data and guidance from IVHS." Personally, with TravTek, I didn't find that to be a problem. I could ignore any information it gave me; the information it displayed while the car was in motion was too simple to be distracting; and operations that involved a lot of information, such as selecting a hotel, could only be done while the car was parked.

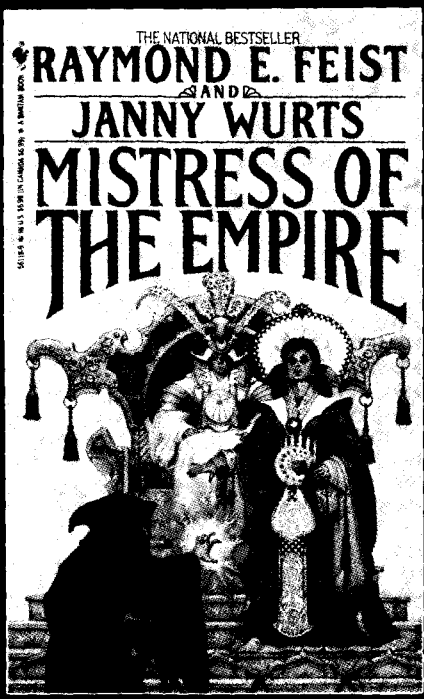
The *Technology Review* article also mentions that relatively few drivers now switch to alternate routes in response to what they see and what they hear on radio traffic reports, and wonders whether they'll be more responsive to advice they get from IVHS. I think the probability is very high that they will, for two reasons. First, current radio reports are quite general, with somebody in a helicopter looking over an entire city and trying to describe trouble spots in a very few words. The IVHS provides a "customized" report: it tells you what's in front of *you*, right now, without cluttering the issue with problems irrelevant to you. Second, the present-day copter cop may tell you there's trouble ahead and suggest using an alternate route, but many commuters don't *know* alternate routes and are too busy driving to fuss with a map. IVHS provides *specific, step-by-step* instructions on how to bypass the trouble—and that's so much easier that a lot more people are likely to do it.

I've felt a little concern about whether people would become too dependent on these aids, losing their ability to navigate without them. Then I realized that most people never *had* much ability to navigate without them, so they—and the people sharing roads with them—would gain more than they lose. I would still advise everyone to learn to navigate without computer aid—but that's no reason not to take advantage of it when it's available.

The things that make IVHS appealing to traffic managers are not the same ones that will sell them to individuals—though they may lead to pressure for legislation that reduces individuals' choice about whether to use them. But my experience says that such systems can make life so much easier (and are such fun to play with!) that they *will* appeal to individuals, too. Right now they're too expensive for most of us, but after watching what's happened to all other kinds of computers in the last few decades, I can't take that seriously as an argument against their coming prevalence.

So I'll return to my opening with a revised prediction. Instead of guessing that in ten years electronic maps will be available in cars, I'll guess that in ten years IVHS systems far more sophisticated than that will be widespread, common, and maybe even obligatory. So it's time *now* to think hard about what form we want them to take. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



From the world on the other side of the Riftwar, a tale of intrigue, ambition and world-rending magic....

The grand saga of the House of Acoma and the land of Kelewan comes to its dazzling conclusion!

"A gripping tale."
–The London Times

Read all Raymond E. Feist and Janny Wurts's novels of the Empire:

Daughter of the Empire
432 pp • $5.99/$6.99 C

Servant of the Empire
704 pp • $5.99/$6.99 C

Mistress of the Empire
672 pp • $5.99/$6.99 C

On sale now wherever Bantam Spectra books are sold.

SPECTRA BANTAM

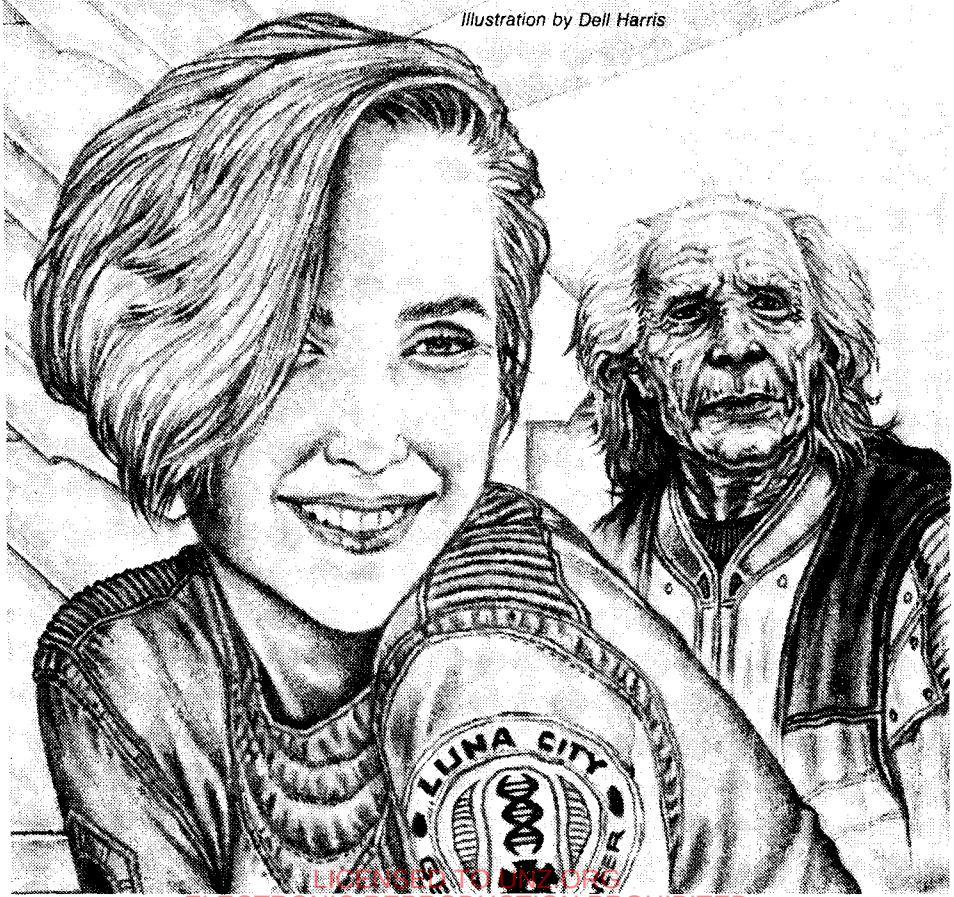
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Jeffery D. Kooistra

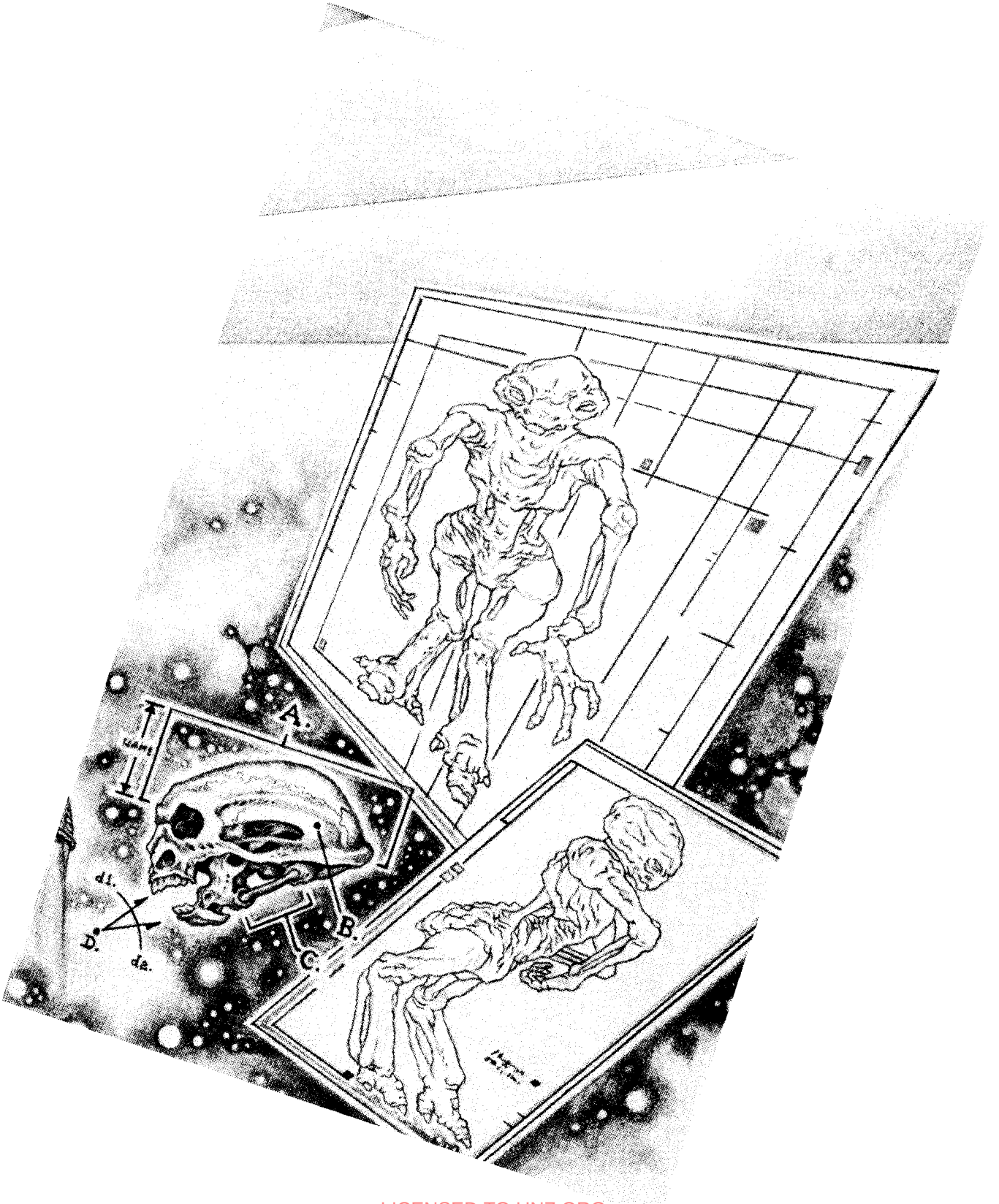
SUNSHINE, GENIUS, AND RUST

General principles make living easier by revealing order in the Universe— until you try to apply them to specifics that include yourself!

Illustration by Dell Harris



LICENSED TO MIZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Samantha MacTavish, as usual after work these days, raced home to her apartment and checked her terminal for mail. The Luna City mail system was excellent, and anything from a serviceman that had reached Luna any time up until a half hour ago should have made it through the military censor machines by now. War or no war, MoonMail guaranteed prompt delivery. Scanning through the listings, she found her latest copy of *The Journal of Genano Engineering*, and a letter from her mom.

But nothing from her husband Steve, out there, somewhere beyond Uranus, or maybe Neptune, serving on a battleship probably, fighting this damnable war against the Belt. "Dammit!" she said aloud. Then softly: "Oh, honey, I miss you."

The last letter had come a week ago, full of feelings, but short on specifics about where he was or what he was doing or when he'd get a chance to come home. She wistfully remembered how they'd gotten together; that stupid stunt he'd pulled as the preeminent suicide orbiteer of Luna City. Steve had bet a System Patrol officer that he could plot a suicide orbit close enough to the lunar surface to allow him to leave a mark on the ground. He'd almost gotten himself killed, had lost the bet in the process, and had thought he'd failed in his greater purpose, which was to impress Samantha enough to notice him. But she already had by then!

And shortly after they'd married, Steve's uncanny ability to plot ultralow perigee orbits over rough terrain had gotten him drafted and sent away.

"Damn war," she said.

Women were not drafted, but she could have enlisted. Her skills in genano engineering were first rate, good enough to get a top research position on the Martian atmosphere project. She would have been made an officer and been put in charge of a billion credit research facility, with no end of lucrative opportunities after the war. But she could never get past the fact that war meant people killing other people. She understood about clashing ideologies, and competing economies, and just causes, but none of that excused the evil of an institution that removed souls from their bodies.

In theory she could admit that sometimes circumstances may conspire to make killing an excusable sin. But this war with the Belt, a war over the mining rights to some dinky rocks that happened to also be orbiting Jupiter or Saturn rather than just the Sun, wasn't good enough.

And besides, the Patrol had separated her from her husband; she wanted no part of it.

Since she had no letter from Steve, Samantha read the one from her mother. It contained the usual trivial news and pleas to be cheerful, but didn't substantially improve her blue mood. She scanned the table of contents of the professional journal, found a couple of interest-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ing papers and looked up their abstracts, but her heart just wasn't in her profession right now.

That settled it. She went to the environment controls for her apartment and turned down the Dykstra pseudograv field from the healthy, muscle tone and bone calcium sustaining one *g* field to a relaxing one half *g,* then into the kitchen and made herself a hot fudge sundae, extra nuts and whipped cream, and settled herself in front of the TV. When her sundae was half gone and her mood had shifted up the spectrum to yellow, still short of rosy red, the call signal sounded.

"Accept," she said to the TV, and the daytime drama she'd been watching disappeared to be replaced by a man in a military uniform. A momentary rush of excitement flooded her, thinking it must be Steve, but a split second later her eyes rested on the middle-aged face, and her mood plummeted. She didn't know military insignia worth a damn, but she thought he was a major.

"Yes?" she said, not quite hiding her disappointment.

"Hello. I am Major Gerald Moore of System Patrol Intelligence. Am I speaking with Samantha MacTavish?" the man asked.

"You have her."

"Would you mind activating your viewer so I can see you?"

Oops, she thought. She hadn't intended to be rude. She turned on the viewer.

What the major saw was a strikingly *cute* woman in her late twenties. Although not a classic beauty, Samantha had a twinkle in her eye and a bright, cheerful smile that had earned her the nickname of "Sunshine" long before. But the woman wasn't smiling now.

"Much better, Ms. MacTavish, thank you. I have a matter of some importance I'd like to speak with you about."

"Is it about my husband?"

"Not at all, Ms. MacTavish. Your husband is Ensign Steven Smith, correct?"

"No. It's Steven MacTavish. He changed to my last name just before he shipped out." From the look on the major's face, Samantha knew he was wondering why Steve had wanted to do that. But it was none of the major's business that Steve loved everything having to do with Scotland, so she didn't continue, but just waited for the major to explain his business.

He went on. "Well, anyway, this matter only concerns you and your talents—not your husband's."

"My talents lie in the field of genano engineering. Is that what you're interested in?"

"Yes, Ms. MacTavish."

Her face became hard. "Well, maybe we can get through this pretty quickly. Do you want me to do work for the military?"

"We do think you'd be able to help us."

"Major, I might be able to—but I won't. I have no interest in helping you go on with this war. My family is already helping enough."

She reached to end the call when

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the major said, "Your opposition to the war is well known to me—"

"It is? Why?"

"Ms. MacTavish, I'm afraid I'm the one who got your husband drafted. Finding talent is what I do. I know quite a bit about you. That's why I called."

Samantha took that in stride, said, "Then you know I won't help you with this war."

"I don't want you to help us with the war, Ms. MacTavish. You'd be working for Intelligence, true, but your work won't be at all connected with the war effort."

Now she was puzzled. "I don't understand."

The major continued: "I'd like to help you understand." He really means it, Samantha thought.

Caught between her own curiosity and her disgust with the military, disgust won out. "No. Just forget it. I don't want to work for the military in any capacity." Again she moved to end the call.

"Wait!" Major Moore said. "Let me make a deal with you."

"I'm listening."

"Let me send over a file that deals with the project you'd be involved in. If, after reading the file, you're still not interested, I'll never pester you again." Now he wasn't being a major, just a man trying to keep her attention.

Well, I guess that can't hurt, she thought. "OK, send the file over. I'm ready to receive."

"I can't do that, Ms. MacTavish. I'll have to have it hand delivered, and we'll have to set up some time where you can guarantee that you will be the only person to accept the delivery."

Samantha couldn't resist. "Oooo, sounds like some really big military secret kind of stuff, huh? Very well. Tomorrow evening at, oh, 1837 hours exactly, no sooner, no later, my apartment. I'll be here then."

He ignored her sarcasm entirely. "My courier will be there at precisely 1837 hours tomorrow evening. Have a nice day." He broke the connection.

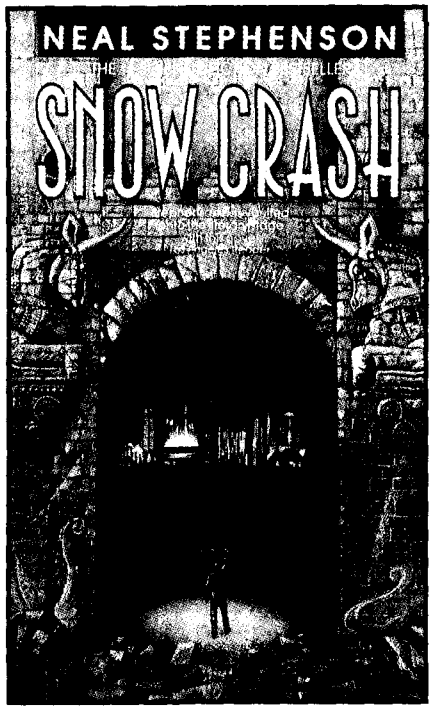
She spent the rest of the evening both convincing herself that, no matter what, she wouldn't work for the military, and also wondering just what the hell this file was going to contain.

She hadn't slept well. It had been one of those nights where you toss and turn and drift from deep sleep to just barely conscious, always pursued by dreams that seem to make perfect sense even as they play the impossible before your eyes.

In one particular dream, Samantha saw a System Patrol battleship land just outside Luna City, and she thought that was interesting because such ships didn't land, but it didn't bother her. Then the side of the ship opened up and Steve walked out, in shirtsleeves, as the crescent Earth shown over his shoulder, and he said, "Hey, my own sweet Sunshine, when are you going to come and join me?" And as she ran out to join him, Major Moore stuck his head out the door

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE #1 SCIENCE FICTION BESTSELLER
A CULT CLASSIC FOR THE 21st CENTURY!



"Stephenson has not stepped, he has vaulted onto the literary stage with this novel.... SNOW CRASH is a cyberpunk romp."
–Los Angeles Reader

"Brilliantly realized... Stephenson turns out to be an engaging guide to an onrushing tomorrow."
–The New York Times Book Review

"SNOW CRASH is a wacky *tour de force*.... A cross between *Neuromancer* and Thomas Pynchon's *Vineland*. This is no mere hyperbole. Cyberpunk fans will be on their knees in thankfulness when they start reading this book."
–San Francisco Bay Guardian

$5.99/$6.99 in Canada

SPECTRA BANTAM

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and dragged Steve back, and she was left standing alone as the ship lifted once again for the heavens.

The dream was on her mind as she left for work that morning. She played it back through her head while taking the overland corridor to the science dome. Most of Luna City was underground, but five domes sat on the surface, the caps to very large cylinders that went down a hundred meters, and contained most of the living space. She could have gone the whole way to work via the subsurface transit system, but this morning Samantha preferred to walk through the surface corridor since from it she could see outside. She stopped at one of the view ports and gazed out at the sharp, bright surface, the magnificent desolation, and felt a little disappointed. There wasn't a battleship sitting out there.

Once at work, she stopped in her cubicle briefly to get her terminal up, then went right into the lab to check on her cultures. Even if her personal life was in disarray, her work for the Martian atmosphere project had been going remarkably well for the past few months.

She looked into the sealed chamber that contained her culture. Inside was a dish filled half way with Martian surface soil, scooped very carefully right off the Martian desert and returned to Luna undisturbed. Inhabiting the soil, now, was a very carefully (and ingeniously, her boss would add) tailored virus/bacteria symbiont, designed by Samantha. Observing the monitor, she noted that the free oxygen in the chamber had gone up since yesterday. She knew that a scan of the soil would show an excess of pure iron. Yes, this bug looked like another success.

The field of genano engineering was only twenty years old, but looked like it would finally make good on some of the promises made by the prophets of nanoengineering at the close of the last century. Nanoengineering, dealing with machines measured on scales of a billionth of a meter, had long been hailed as the technological solution to all ills. Diseases would be healed, pollution eliminated, and wealth beyond imagination available to everyone, all provided on the backs of trillions of self-replicating, virus-sized slaves. The promises were still there eighty years later, but the problems of both controlling and powering nanoscopic machinery had proved to be almost ridiculously difficult. Advances were made, but never the critical breakthroughs.

And then in 2071 a genius named Chang genetically reengineered a virus to "operate" a nanoscale tool, and thus the full marriage of genetic engineering and nanoengineering took place.

Samantha was remarkably adept at the new art. Originally, she'd gone to school to be a doctor, but her biology courses had exposed her to the world of research science, a world she found she didn't want to leave. Her excellence got her a full ride to Tokyo University

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and Chang himself as her advisor. She earned her doctorate by making genano bugs which assembled for her a perfect cube of diamond, ten centimeters on a side. That got her both attention and a job in Luna City at the best laboratory for applied genano engineering in the Solar System, working in the atmosphere division of the Martian Terraforming Project.

And now another of her bugs had come through. This particular strain was designed to separate iron oxide into its constituent elements since the sands of Mars were full of the stuff. Bugs that broke down compounds into elements were nothing special, but this breed would also be able to live, reproduce, and work in the Martian environment with no need for additional care. In her symbiont, the bacteria lived in the Martian environment, and the virus lived on the bacteria, and while so doing, both manufactured and operated nanotools to accomplish its task. And if the iron oxide bug worked, others would follow to break down other molecules, and thicken the Martian atmosphere.

She smiled in delight, the first time this morning that her famous smile showed itself.

"I see you over there, pleased with yourself again, no doubt!" The voice came from behind. It was Martha, fellow researcher, friend, and mother surrogate.

"What?" Samantha said. "I'm just happy for the project."

Martha brought her cushiony self over to the chamber and looked in. "I checked your culture this morning myself. I couldn't wait to see that smile when you showed up." She gave Samantha a hug.

"Thanks, Martha."

"Did you get a letter from Steve yesterday?"

That brought clouds across the sunshine. "No . . . no, I didn't," Samantha said.

"Oh Sammi, I'm sorry. I was so sure you'd hear from him yesterday. . . ."

"It's OK, Martha. I'll probably get a letter from him today. It's just that it's been so long."

Martha gave her another hug, compassionate and motherly this time. "I know, honey. I know." She brightened. "Why don't you come over to my place for dinner tonight? Ted always likes it when you visit, and then maybe the three of us can go down to Entertainment Central afterwards."

Samantha thought about it, then remembered her call yesterday. "I'd love to, Martha, but I can't. I got a call from Major somebody yesterday and I promised I'd be at my place tonight when his courier drops off a file for me to look at."

"A file on what?"

"I don't know. This major, I think he said his name is Moore, wants me to work for him. I told him I wasn't interested in military work, but he was persistent, so I agreed to look at this file just to get him off my back."

"Didn't you tell him how you feel about the war?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"That didn't faze him a bit. He even told me he was the one responsible for getting Steve drafted."

"I'm surprised you didn't just cut him off," Martha said.

"I am too. But I admit that I'm kind of curious to know what's in that file he's sending over. Say, why don't I call you after the file gets dropped off, around 1900 or so? If it turns out to be nothing we could still get together."

This was agreed to, and they both got down to work.

Dinner in front of the TV, alone, with no letter from Steve to cheer her, was a considerably depressing business. A post dinner sundae failed to help, and Samantha was just about to attempt the last ditch effort of a hot bath when the door buzzer went off. "Damn . . . that messenger." With a sigh she went to answer the door. A glance at the clock told her it was exactly 1837 hours. She kind of liked having the military kowtow to her orders like that.

At the door stood a handsome young man in a military uniform. She thought he was a lieutenant. She looked again; *really* handsome young man. That in itself cheered her a little, but she wasn't the sort to find comfort in the arms of another man, so she fought off her desire to flirt and said coldly: "Yes?"

"Ms. MacTavish?"

"The one and only."

"May I come in?"

"No."

"I see. I'm Lt. Robert Nachtegall, Major Moore's courier. I have a file for you." Samantha couldn't help but notice the man's own coldness. Well, she deserved that. She was surprised to see that the proffered file was a hard copy. She took the folder from his hands.

"Hard copy? Is the military still in the last century, Lieutenant?" And why am I being such a bitch? she wondered. It's not this guy's fault that Steve didn't write.

"Hardly, Ms. MacTavish. Major Moore directed me to tell you that this file is for your eyes only, and you are not to discuss its contents with anyone. Ever. Do you understand this?"

The young man's manner, and his statement, knocked all the sarcasm out of her. "It really is that important, huh?"

"It is, Ms. MacTavish."

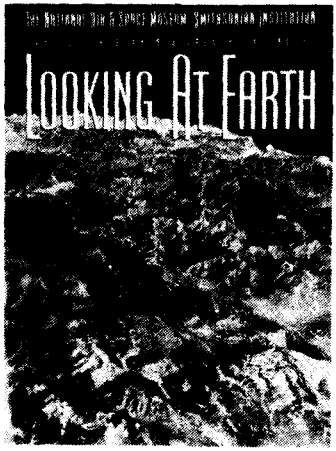
"All right. I understand the restrictions. When do I need to get this back to you?"

"You don't. That's the reason for the hard copy. Tonight before you go to bed, leave the entire file in your sink. Tomorrow morning you can rinse the residue away. Major Moore will contact you tomorrow. Good evening, Ms. MacTavish." He turned smartly and strode off down the corridor, not waiting for her to acknowledge the end of the conversation.

Samantha took the file to the couch, shut off the TV, which was annoying her with war news, and opened it up.

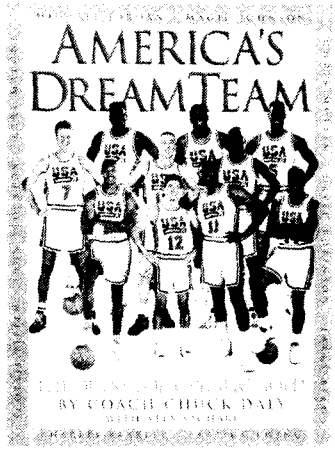
And she didn't quite get it. The file contained a potpourri of differ-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LOOKING AT EARTH is an unprecedented portrait of our planet as seen from the heavens. See the earth in images captured by spacecraft that reveal sights hidden from earth-bound eyes. Spectacular wonders such as The Grand Canyon, Mount Fugi, the Andes, and Africa's Great Rift emerge in sweeping panoramas in this beautiful, hardbound book. *Looking At Earth's* 304 pages are packed with 290 exciting, full-color photographs, satellite images, photo mosaics and high resolution topographical images.

AMERICA'S DREAM TEAM: The Quest For Olympic Gold is the only book of its kind to chronicle the USA Olympic Basketball Team. Written by coach Chuck Daly, published in conjunction with the NBA, this book includes the team's history, statistics, strategy, player biographies, behind the scenes information-the whole story from training camp to Barcelona. Follow the Dream Team on their road to Olympic glory with 275 full-color photos and illustrations in this beautiful hardboud edition.



Please send me: ____ copies of **LOOKING AT EARTH @ $39.95** each
____ copies of **AMERICA'S DREAM TEAM @ $24.95** each

Please add $1.50 per book for shipping & handling. NYS residents add 8.25% sales tax.

Please make check or money order payable to **Turner Publishing, Inc.**

Send to: **Turner Publishing, Inc., 420 Fifth Avenue, New York, NY 10018**

Name _____

Address _____ Phone _____

City _____ State _____ Zip _____

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ent reports. In addition to twenty pages of close-print text were dozens of photos, many of which looked like cell cross-sections seen under a microscope. There were also lists of composition materials, calculations, and equations that looked like something out of her freshman physics class or her husband's journals, and a brief subsection that referred to three hundred different references ranging over the last century and a half.

The only thing she could immediately recognize as normal in the entire file was a photo of some man named Richard Michaels, whoever he was.

After her brief survey of the contents, she decided to concentrate on the photos. The first was of a corpse, badly desiccated, of some kind of animal. She read the caption: *Alien body as found upon initial boarding of OEV 1.* "What is this stuff? Something out of a bad movie?" she muttered. She went through more of the photos. She realized that they showed the "alien" body in various stages of dissection.

She didn't get it. No one believed in aliens anymore. If they existed, they should have been here by now, was how the old argument went. Steve had never believed in BEMs as he called them: bug-eyed monsters. He'd never explained how that term had originated either. Until now she hadn't been interested.

But unless this was some kind of elaborate hoax, what the major had given her was a file on mankind's first contact with an alien species.

She dug into the section on the alien biology.

The call signal went off. It chimed half a dozen times before Samantha recognized it and answered. It was Martha.

"Sammi? What's going on, honey? I was expecting you to call half an hour ago."

"Oh, Martha, I'm sorry. It completely slipped my mind. That file I told you about—the one the major was going to send over. Well, it turned out to be a much bigger deal than I expected, and . . . I guess you shouldn't expect me tonight. I'm going to be busy for quite some time."

"What's in the file, Sammi?"

"I can't tell you that. I'm sworn to secrecy."

Martha was old enough to have been a little girl during the last big war, the one where the Belt fought for its independence. Her father had taught her well that sometimes you accept that a secret is a secret and don't pry. She said, "OK. I understand." Then: "Do you think you might work for the major now?" There was concern in her voice.

Samantha hadn't gotten that far in her thinking yet. She was too fascinated by the contents of the file to have considered what she was going to tell the major tomorrow. "I don't know, Martha," she finally answered. "I don't know."

The biological data was both fascinating and puzzling. Most of what she found was utterly unlike anything she'd encountered before.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Since this was an alien, that made sense. But there were also tantalizing similarities. The amino acids and the protein structures were oddly similar to terrestrial life. And the genetic structure of the alien cells was a double helix. "Good Lord," Samantha whispered. "All God's children got the helical stairway." She also noted similarities in the relative chemical abundances of the alien's whole body with that of mammalian bodies, except for the amount of iron; the alien body had a lot more iron.

She found the answer to that puzzle in the section on anatomy. The alien's bones were made of tubular steel, cross hatched on the inside for great strength. "A steel skeleton. And it's natural. Instead of calcium they build bone out of iron." She couldn't help but realize that her work on the Martian atmosphere project and the abundance of iron in the alien body must have been what had put Major Moore onto the idea of recruiting her. She didn't know why yet, though. There were plenty of other scientists who could work on this, and obviously a great many already had; the reports she was looking at were first rate.

Other anatomical facts were equally fascinating, but didn't seem to fall into her area of expertise like the iron bit did. The alien didn't have muscles, but a system of hollow tubes and pistons, and several heartlike pumps; the steel skeleton was driven by hydraulics. She also noticed that the elbows and knees bent backwards, unlike a human's.

And the people who had worked on it had failed to come to a consensus on what the alien used for a brain.

Additional reports in the file dealt with alien technology and the whole story of how Intelligence had come into possession of the alien body, but Samantha only had time to skim these sections; it had been hours since she'd opened the report, and the paper was beginning to disintegrate. She remembered the lieutenant's directive to put the file in the sink, and very reluctantly she did so, but not before the pages had discolored themselves to the point where she could no longer read them.

That night she lay awake for some time. "Tomorrow I'm going to have to make a big decision," she said to the ceiling. "I don't want to work for the military. But, dammit, I want in on this thing, too."

The following day in the lab did not go quickly. Her cultures were still doing just fine, and Samantha busied herself most of the day with writing up results and working on a paper. But she found it hard to concentrate as her mind kept drifting to the contents of the secret file.

At one point Martha came over from her work to talk. Wrapped up in her own thoughts, Samantha hadn't even noticed that Martha had failed to greet her earlier, as was her custom. Last night she'd had a stray idea or two that perhaps Martha would be angry with her about not coming over, but then

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

decided that was silly.

"So how is our resident genius doing today?" Martha asked. She sounded cheerful enough, but Samantha thought she detected an undercurrent of tension in Martha's manner.

"I'm no genius, Martha. I just work hard and I get lucky."

"Did that file keep you busy all night?"

"Yes, it did. I'm sorry again, Martha. I would have liked to have gone out last night, but..." She had been just about to say that the file was timed to disintegrate, so she had to look at it last night, but then Samantha wasn't sure if Major Moore would want her to release that particular fact. I'm not even working for the military and already I'm censoring what I say, even to my friends, she thought. She didn't like that one bit. Instead she said, "I just couldn't pull myself away. And the major wanted me to read all of it last night." That wasn't quite a lie, but it was hardly the truth either.

"That's all right, Sammi," Martha said. "I know what it's like when the military wants you and there's a war on. My daddy, God rest his soul, used to spend half his time telling us kids what kind of questions we couldn't ask him. I won't pry into your secrets." She walked away.

But they're not my secrets, Samantha wanted to say. But if she did work for the military, they would be.

By the time she got home she had pretty much made up her mind to tell the major to go stuff his alien where the Sun didn't shine, but then was disappointed when she found the major hadn't left her any messages during the day. She recognized that she wanted it both ways—to work on the alien, but not be working for the military. What's the big deal? she thought. So it's the military? I wouldn't actually be doing war work. This alien is bigger than my personal feelings.

She was half done with eating when she realized that she hadn't even noticed that she still hadn't gotten a letter from Steve. By the time she finished eating, she still hadn't gotten a call from the major, either.

At exactly 1837, the call signal went off. She answered.

"Well, I see you have a sense of humor, Major, calling at 1837 hours. Or was it just a coincidence?"

"Why, Ms. MacTavish, I'm sure you know that we in Intelligence don't believe in coincidences." A smile broke out across his face.

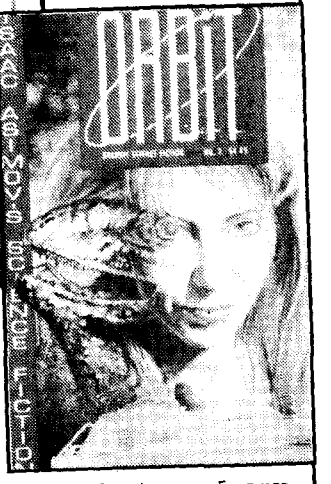
"Point made, Major. And I'm sorry for giving you a rough time the last time you called. So where do we go from here?"

"Have you made up your mind to work with us on this project, Ms. MacTavish?"

"Please, call me Samantha," she said. But for now, "Sammi" or "Sunshine" were out. "No, I haven't decided yet. I'll admit I'm intrigued. Excited even. But I'm still likely to say no. However, I have decided to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A Special Offer For *Analog's* Readers



ORBIT

VOLUMES 1 THROUGH 3, $4.95 EACH.

OR ORDER THE COMPLETE, THREE VOLUME SET FOR ONLY $9.95 (A 33% DISCOUNT!)

FIND THE BEST GRAPHIC SCIENCE FICTION IN ***ORBIT***, THE GRAPHIC ANTHOLOGY ***L.A. READER*** CALLED "...THE BEST—IF NOT THE ONLY—WAY TO VISUALIZE [SCIENCE FICTION]." TOP AUTHORS FEATURED INCLUDE ISAAC ASIMOV, BEN BOVA, FREDERIK POHL, LUCIUS SHEPARD, LAWRENCE WATT-EVANS, AND OTHERS... AND THE ARTISTS INCLUDE AWARD-WINNERS SUCH AS JOHN BOLTON, DAVE STEVENS, JOHN POUND, AND TOM YEATES. GET INTO ***ORBIT*** TODAY!

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

❑ ***ORBIT*** #1 $4.95 ❑ ***ORBIT*** #2 $4.95 ❑ ***ORBIT*** #3 $4.95 ❑ ALL THREE $9.95

ADD $1.00 POSTAGE PER ORDER. SEND COUPON AND CHECK OR MONEY ORDER IN U.S. FUNDS TO:

DEPT. AN 053, **ECLIPSE/ORBIT, P.O. BOX 1099, FORESTVILLE, CA 95436**

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

let you have a little more time trying to convince me."

"Very well Ms., er, Samantha. Did you make it through the whole file?"

"Actually, no. I got pretty deeply into the technical parts, and I was going to read the synopsis of how you got your hands on the alien, but the report disintegrated before I could do that."

"Sorry about that, Samantha. But most people read the synopsis first—"

"I'm not most people," she said bluntly, interrupting.

"No, that you're not. How much of the story would you like?"

"Just the highlights. I don't want to have too much to forget if I decide not to work for you," she said.

"OK. About four years ago the USSSG, that's United Solar System Study Group, sent a probe out deep into the inner cometary halo. They also sent along a new postdoc in astronomy named Richard Michaels, just in case something really unusual came up that required someone on the scene to handle. Shortly after arriving in the cometary halo, OEV 1 discovered what seemed to be—"

"What's OEV 1 stand for?"

"Sorry. Oort Exploration Vessel 1. Anyway, the ship found what seemed to be a chemical refinery on a comet body."

"And what was a refinery doing out there in the cometary halo, right?"

"Exactly. Mr. Michaels at first thought it might be something the Belt had put there, but then his ship was attacked and crippled. The alien ship ended that theory."

"I don't suppose he believed in BEMs before that?"

"BEMs?"

"Bug-eyed monsters. And don't ask me where my husband got the term from," Samantha said.

"Well, bug-eyed, no. But they were monsters. The aliens crippled the OEV 1, but very carefully. Then they boarded."

"What happened to Richard Michaels?"

"He lived to tell about it. He is a very brave and resourceful young man. Would you like to meet him?" the major asked, a bit eagerly Samantha thought.

"Maybe. But go on with your story, please."

"There isn't that much more to tell. At least, not unless you decide to work for Intelligence. The aliens boarded, two of them, and they separated shortly after boarding. I should mention that OEV 1 is a big ship. Michaels managed to surprise one while it was investigating and kill it—"

"He killed it just like that! He didn't try to communicate with it?" Samantha was disgusted. She didn't think she'd care to meet this shoot-first-ask-questions-later hero after all.

"The aliens had opened fire on his ship, Samantha. Without warning. Mr. Michaels was afraid for his life. Furthermore, when the aliens boarded, they didn't ask permission—they just blasted their way in,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and they didn't give a damn whether or not they killed anyone when they did *that!* Yes, he killed one of them. He tried to kill the other one, too, but it got away!" The coolness of the major's manner disappeared in the heat of his answer.

"I didn't mean to upset you, Major. I'm sorry. I wasn't there, so I shouldn't question what he did," Samantha said. And that's as humble as I'm going to get, so you'd better take it, she thought.

"Right." Down a couple of degrees, but far from cool. "To continue, after that Michaels managed to send a message back to Earth. The USSSG contacted Intelligence right away—," she *knew* that was a half truth, "—and we hushed up the story immediately. Mr. Michaels thought he'd have to wait a few years at least for any possible rescue, but, well, the military has ships that could get him and the alien body back a good deal sooner than that."

Clearly finished, the Major waited for Samantha to comment, or ask another question. She wasn't sure how to proceed. The story fascinated her. She feared that if she listened to the major much longer, she really would throw caution, as well as her principles, to the wind and join up. Finally, she said, "Major Moore, I know at least a hundred other biologists who are more competent than I am to work on this . . . what do you call this project anyway?"

"We call it 'The Phinon Project.' "

"Odd name."

"Odd project," the Major said.

She figured out that he wasn't going to explain the name any more than that, so she went on. "What sort of work do you think I might be able to do for Project Phonon that these others can't?"

"That's 'The Phinon Project,' " Major Moore corrected, a little irritated.

"Sorry."

"To answer your question, I don't know what sort of work or what sort of results I expect to get from you. That's not the point. You just happen to be one of the brightest and most talented individuals in the field of genano engineering, and you may be the person we're looking for."

"Looking for for what purpose, Major?"

"To kill the aliens in the event it becomes necessary," he answered bluntly.

"That's what I thought. It isn't enough that we slaughter each other—you want us to take our freak show on the road and slaughter everything else in the Universe, too." She said it as frostily as possible, and expected Moore to recoil.

He went on the offensive instead. "Spare me the melodramatic pacifist nonsense, Ms. MacTavish. The aliens attacked a human ship first, that's a fact. They pose a threat, the full nature of which is not yet certain. But goddamit, if we have to fight them we'd better be ready! You're just one of a hundred I've

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

contacted, one of a hundred hypertalented individuals who might, just might, provide the key to defeating these aliens if they become our enemies. I don't want to go to war with the aliens, Ms. MacTavish. But if we have to, I'd rather we had a chance to win. And if they were to attack tomorrow, we wouldn't!"

Pushed a button there, Samantha thought. "That's a bit melodramatic too, isn't it Major?" she said.

"Anything having to do with war always is, Samantha." He was actually smiling again.

"OK, Major Moore," Samantha said, making up her mind. "You haven't gotten me into your little project yet, but I'm willing to admit I see the logic of it. But I still don't know if I want to work for you. Do you have any more things you want to do to try to convince me to join? I'm open to the attempts."

The major paused, seemed to be considering what options he had left. And whether or not I'm worth it, Samantha thought. "To be honest, Samantha, I'd hoped this call would be enough. If you were anyone other than yourself I'd give up at this point. But someone who has studied your work . . . he is working for us already . . . told me to go all out to get you."

Forced you, I bet, she thought. "I thought you said you knew about me through my husband?"

"I did. But that isn't what got your name brought up for this project."

Curious, Samantha asked, "Who was it?"

"Dykstra."

"I don't know any Dykstras," Samantha said.

"Dr. James Christian Dykstra, the hypergenius responsible for artificial gravity, defense shields . . . the Dkystra that Dykstra field theory is named after."

"Oh."

"I'd like you to meet him, Samantha. He's on the Moon these days."

She was flabbergasted. Moore wanted her to meet the foremost genius of the twenty-first century, the man who'd replaced Einstein as the archetypical genius. And he knew about her work. All she could think of to say was, "I thought he was dead."

"He's 126 years old, Samantha. But he hasn't lost anything."

"When?"

"I take that to mean you want to meet him?" the major confirmed.

"Absolutely. Who wouldn't?"

"Very well. I'll have you brought to our headquarters tomorrow. Can you be ready to go at 1000 hours?"

"Yes."

"I'll have Lt. Nachtegall pick you up. I'd also like you to meet with Richard Michaels."

"OK."

"Have a nice evening, Ms. MacTavish." He signed off.

She knew this would be another night of tossing and turning. But she was also afraid that, after tomorrow, there would be no turning back.

Lt. Nachtegall arrived at precisely 1000 hours. They took the elevator

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

up to the dome where the local shuttles berthed, and Nachtegall brought her to a sleek military courier.

They took off over Mare Crisium, flying smoothly as the surface repulsors both held them aloft and thrust them on their way. Samantha reflected that the technology that went into floating shuttles was all a product of the genius of J.C. Dykstra, the man she would soon meet.

She was nervous. What do you say to a legend anyway?

She'd read the man's biography in school, and she tried to remember some of it. She never forgot the opening line: "There are geniuses, and then there are geniuses, and then there's Dykstra." Along with being a genius of the first order, he was also supposed to be an exceptionally *nice* person all around, giving loads of money to charity, and unselfishly giving some of his most potentially lucrative patents away to the public domain. He was also devoutly religious and Samantha recalled that this had caused him some problems in the past.

She was bothered that Dykstra had agreed to work for the major, had agreed to work on a project that had as its objective the designing of means to kill the aliens. Could that ever be right? That just didn't jibe with her views of what a great, kind, genius should be involved in. But maybe he was seduced in, just like they're trying to do with me, she thought.

On the other hand, she was tickled to death that Dykstra had followed her work, had known about li'l old Samantha MacTavish, and had wanted her to join him on The Phinon Project. It was an incredible honor.

The flight took them to the high ground around Mare Crisium, and to the entrance of the underground fortress of the System Patrol High Command. The courier boat flew into the vast berthing cavern and landed gently amongst a score of similar craft. Lt. Nachtegall led her through the pressure lock into a long corridor, and then unerringly through the labyrinth of halls, cross corridors, shafts, and elevators that honeycombed the mountain, until finally Samantha was brought into a comfortable office and told to wait.

The wait wasn't long; Nachtegall was barely out the door when Major Moore entered, greeted her warmly, and took his seat behind the desk. "So, Samantha," the major began, "did you change your mind and decide to join us since last night, or do you still need to be persuaded?"

He sounded patronizing; she didn't like it. "No, Major, I haven't decided to join. I still need to be convinced that what you're doing has any merit . . . no, I take that back. I need to be convinced that what you're doing has any *virtue*. Do you understand the difference?"

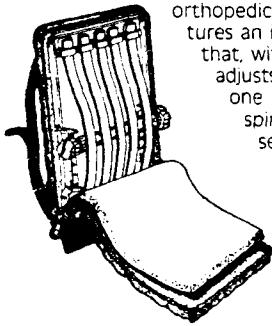
"No, Ms. MacTavish, I don't." But now he wasn't being patronizing. "Richard Michaels will be in to talk with you in a moment. I'll leave the office. You can ask him anything you like, and he can answer what-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

MAIL ★ ORDER ★ MALL

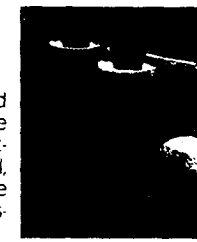
▼ BACK SUPPORT THAT HITS THE SPOT

A soft, cushiony sofa, as inviting as it is to some, can spell agony to a back-pain sufferer. As can office chairs, car, plane or train seats — even ordinary bed-rest pillows. A firm back support is often the answer, but WHY, you ask, does the curve always hit the wrong spot on MY back? This support, developed in cooperation with leading orthopedic physicians, features an internal roller bar that, with a simple twist, adjusts to nine positions, one perfect for your spine! The roller bar serves to shape five vertical ribs of spring steel — for very effective support. More features: comfortable foam padding, durable plastic frame and washable cover, plus convenient side zip to enable roller adjustment, velcro-closed straps for certain chairs and handy carrying tote. Just 2 lbs., 12"x17" — truly a back's best friend. **$34.98** ($6.00) #A1888X.



▼ FOOD FOR WOOD

Most of the convenience waxes you buy actually dry out wood instead of nourishing it. What's the alternative? Our choice is Williamsville Wax. It is made of beeswax and lemon oil, heat-blended with other natural oils. It can be used on any type of wood, any type of finish, on paneling or kitchen cabinets as well as fine furniture. Williamsville Wax is super for restoring neglected or mistreated wood. Two 8-oz. bottles cost **$13.98** ($3.25) #A1968.



CALL TOLL FREE 24 HRS. 7 DAYS 1-800-722-9999

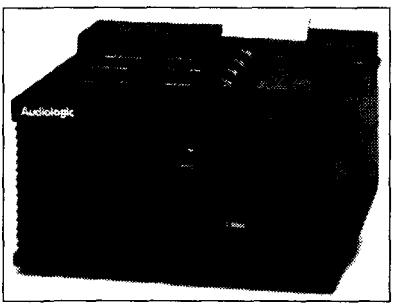
TO ORDER: Send check with item number for total amounts, plus shipping & handling shown in ( ) payable to **MAIL ORDER MALL**, Dept. 053 AN, P.O. Box 3006, Lakewood, N.J. 08701, or call TOLL FREE **1-800-722-9999.** N.J. residents add 7% sales tax. We honor MasterCard/Visa. Sorry, no Canadian, foreign, or C.O.D. orders. Satisfaction Guaranteed. 30 day money back guarantee for exchange or refund.

Magalog Marketing Group Inc. © 1990

1905 Swarthmore Ave., Lakewood, N.J. 08701

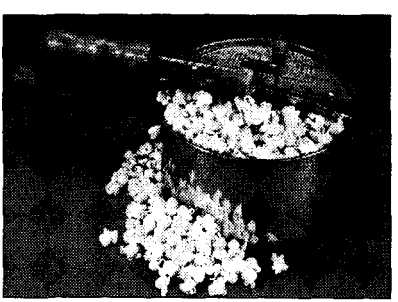
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SLEEP SOUNDLY WITH SOUND SLEEPER



Is noise pollution interfering with your ability to get a good night's sleep? If so, then the Sound Sleeper by Audio Logic is the clock radio of your dreams. Sound Sleeper combines a state of the art AM/FM cassette clock radio with the benefits of natural sound conditioning. Sound Sleeper lets you fall asleep to the Sounds of ocean surf, rushing waterfalls and/or rainfall with the flip of a switch. After a relaxing night's sleep, wake up with a buzzer or music from the radio or cassette. So why have an ordinary clock radio when you can have the cassette clock radio that not only wakes you up but also lulls you to sleep! $89.98 ($6.95) #A2000

GOURMET POPCORN POPPER



The incredible Theater II through-the handle, bottom-stirring popcorn popper uses stovetop power to reach the same temperature (465°F) as commercial poppers. Popcorn explodes to full expansion, steam damage is el-iminated, a faster finish preserves tenderness, and nearly 100% of the popcorn pops! Result: six quarts of the best popcorn you've ever tasted..in just three minutes start to finish. Faster than most microwaves, Wooden handle for a safe grip, and pops with a minimum amount of oil or butter for delicious diet popcorn. (approximately 500 calories per 6 quart). Produces tender, fluffy, old-fashioned movie theater popcorn in just minutes. Made in USA $27.98 ($5.75) #A1963

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ever he wants to, but none of it leaves this room. Is that understood?"

"Yes, Major Moore, that is understood." Samantha sensed that something was eating at the major, like he was in a position he didn't like one bit, but she couldn't be sure. He hadn't been patronizing before, and the last time he'd emphasized the classified nature of what was being discussed, there hadn't been that threatening undertone that if she talked, the major would make things difficult for her. She decided he was tired of dealing with her, and resented the fact that he had to go to these lengths to get her for the project. Tough shit, Major, she thought.

Major Moore left. Some words were exchanged outside the office, and then a man her own age entered. She was mildly surprised. Not having had any idea what the first man to encounter, and fight, an alien should look like, she still had pictured someone different, bigger perhaps, well muscled. This man was skinny, with a baby face; clearly not the soldier type. "Hello," he said. "I'm Richard Michaels." He held out his hand.

She accepted the handshake. She looked at him more closely, looked into his eyes. He's harmless, she thought, but haunted. And toughened. "I'm Samantha MacTavish." She made up her mind about him. "You can call me Sammi."

"Thanks. Call me Rick."

"So what are you going to say to convince me to join up?"

"That depends, Sammi. Are you a pacifist?"

"Not strictly. I think this war is stupid, and I think gearing up to fight aliens, the first intelligence from out there that we've encountered, is obscene. But I don't believe that there's never a reason to fight."

"Good," Rick said. "I feel the same way about this war with the Belt. So if I show you that there may be no choice other than to fight these aliens, you'll consider helping us?"

"I'll take it into consideration."

"Fair enough." Samantha remained seated, but Rick paced around the office as he talked. "They just popped in from nowhere and blasted my ship while I was minding my own business," he said. "And they did it carefully. From a hundred thousand klicks away they nailed my drive section and crippled the ship with an x-ray laser."

"So they didn't want to destroy you?" Samantha broke in. "They could have blasted you out of space, but they didn't."

"That's right. They wanted to check me out. They landed on the OEV 1 and blasted their way in."

"Blasted?"

"Yes, blasted. And they didn't have to. They actually entered the air lock and closed the outer hatch, but then instead of opening the inner one, they just cut through it and kicked it in."

"Why? Why didn't they use the inner door?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Beats the hell out of me. They were like that. Once I saw that they were going to shoot first I stayed away from them. The two that came aboard eventually split up, and one went to check out the drive room. The other just took his weapon and went methodically down the corridor, cutting doors off and kicking them in, then looking around inside the rooms."

"Were the doors locked?" Samantha asked.

"No! That's just it—they didn't give a damn about blasting things. I guess they must have liked it." Rick paused in his story, thinking, then said, "That's one of the things I want you to understand—I found their behavior incomprehensible."

"So how did you escape?" Samantha prompted.

"With luck and a bit of ingenuity. I made myself a spear out of some wire conduit, heated it in the oven, hid and skewered one of them when he came through the door. They had these guns, something like lasers except that the beam was adjustable to come out only a definite length and then stop. I don't know how they did that, but Dykstra says he does. Anyway, when I stabbed the alien it lost the weapon and I burned his head with it.

"After that I put my pressure suit on, then dragged the body into the corridor and waited for the other one to come along. I thought it would stop to investigate the dead one; then I was going to kill it with the gun. Only it didn't hesitate—it took off like a shot, blasted through the outer airlock, let the rush of outflowing air take it outside. I went after it, and found it with its leg impaled on a spike of hull metal. Before I could kill it, it cut its leg off and got back into its ship, and zip, it was gone."

"So it just took off and didn't bother about the one you'd killed at all?"

"That's right. It didn't bother about me either. It could have killed me when I was chasing it, but it didn't."

"It just left?"

"It just left." Rick finally quit pacing and sat on the top of the desk. "After that I managed to laser a message to Earth, told them what happened. I did some of my own dissection of the corpse, but then I left it out in the vacuum and waited for rescue."

"Did the alien ship ever come back?"

"No. I don't know why not, either. Nor why I wasn't just finished off after the alien escaped. But I'm not going to complain."

The conversation continued for some time. As it progressed, Samantha found herself liking Rick more and more. He was remarkably free of pretensions to heroism, or any kind of machoism; just a nice guy, and like her, not that long out of graduate school. He just happened to be the man on the spot, doing the best he could with the cards he'd been dealt.

As the discussion went on, they ranged over many topics, and Samantha asked questions dealing

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

with the physical movement of the alien, among other things. "That hydraulic system inside the alien blew me out," she said. "How did it *move?* Was it jerky or smooth?"

"The backwards joints made it move funny, I guess," Rick answered, remembering. "Sort of like an ostrich. But aside from that, its movements were as fluid as a humans." He couldn't resist: "More fluid even."

Samantha got the joke right away and laughed. "Did it move faster than a human?"

"I'll have to give a careful answer to that. I was able to, well, startle it pretty well when it broke into my kitchen. Well enough to drive my spear into it. During the struggle it didn't seem able to move any faster than me. But it was tougher—the damn thing almost took me out even with a spear sticking out of it." Rick looked off into space, reliving the moment. Shortly, he was back. "Anyway, when the other one bolted for the airlock, it moved a hell of a lot faster than I could."

After an hour the conversation wound down. As she had wanted to be, Samantha had been thorough in her questioning. And Rick had been capable of supplying thorough answers. There was just one matter left that she wanted his opinion on.

"What's your guess, Rick?" she said. "Do you think we'll really have to fight them?"

"Yes."

"Why?"

"I wish I could give you a reasoned answer to that, Sammi, but all I have to go on is gut feelings and intuition," Rick said.

"That's what I'm interested in."

"I think they're all over the place out there. I found that refinery on only the fourth comet OEV 1 checked out. It couldn't possibly be the only one. Space is too big. And that ship showed up awfully fast." He sighed. "And they weren't interested in being friendly. My overall impression is that these are the sort of beings that don't allow possible problems to exist for very long. If I'm right, and they're spread all through the cometary halo, I don't think they'd like to have us start messing around on their turf.

"And another thing . . . when I was face to face with that one, I didn't feel any sense of . . . what?" He was unable to find the words. Then he said, "Have you ever been in a pool with dolphins?"

"No."

"I have. And even though dolphins are a radically alien intelligence, inhabiting an entirely different environment from humans, when you're with them you can't help but get the feeling that you're with another being—something that feels and senses, thinks, reacts, and cares. But the alien wasn't like that. It just did things, coldly, efficiently . . . like it was following a program."

"That's interesting," Samantha said. "Do you think they might be a construct, a biological robot maybe?"

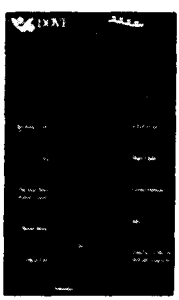
"I don't know about that," Rick said. "I just know they're *different.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

DOVE AUDIO

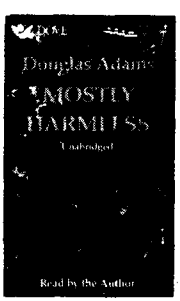
CRYSTAL LINE
by Anne McCaffrey
Read by Adrienne Barbeau

The continuing adventure saga featuring the daring exploits of heroine, Killashandra Ree.
ABRIDGED
2 Cassettes Approx. 3 Hrs. $16.95



BEST OF SCIENCE FICTION & FANTASY
stories by Issac Asimov, Arthur C. Clarke & others
Various Celebrity Readers

Ten journeys into the imaginations of today's best science fiction and fantasy writers.
UNABRIDGED SHORT STORIES
4 Cassettes Approx. 6 Hrs. $24.95



MOSTLY HARMLESS
by Douglas Adams
Read by the author

At last, the long-awaited fifth book in the increasingly inaccurately named Hitchhiker's Trilogy
UNABRIDGED
4 Cassettes Approx. 6 Hrs. $24.95

Please mail your order with a check to:
DOVE AUDIO, INC.
301 N. Canon Dr. Ste. 203
Beverly Hills, CA 90210

____	CRYSTAL LINE	$16.95
____	BEST OF SF/FANTASY	$24.95
____	MOSTLY HARMLESS	$24.95

Name _____
Address _____
_____
City _____
State _____ Zip _____

Subtotal _____
Sales tax CA residents 8.25% _____
$3.50 shipping & handling _____
Grand Total _____
To order call toll free (800) 328-3683

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

And I don't think that morally, ethically, maybe philosophically, whatever . . . that we have anything in common with them."

An hour later she was standing outside of Dykstra's door. After Rick had left, Major Moore had not returned, but Lieutenant Nachtegall took her down to the cafeteria for lunch. Then he led her through the maze of halls and corridors again to a thoroughly nondescript door and told her that she would find Dykstra inside, and that he was expecting her. Then Nachtegall left her alone there.

I guess I'd better buzz or knock, she thought. This won't get any easier if I wait. Besides, there's nothing to be afraid of.

Nevertheless, he was a legend.

She pressed the buzzer. The door opened. A pleasant voice said, "Come in, Mrs. MacTavish. Watch your step—the gravity is lower in here."

She entered, and the pseudograv field felt to be about half standard. Sitting in the middle of a conservatively, yet elegantly decorated room was an old man. He looked like a well preserved seventy, and for a moment Samantha doubted that he could be Dykstra at all. But he arose and said, "Hello. I'm James Christian Dykstra. My friends call me Chris. You may call me whatever you feel most comfortable with."

"I'd probably be most comfortable with Dr. Dykstra," she said.

He smiled at that, a soft smile. He looked at her, eyes twinkling, crystal clear, and infinitely penetrating. "As you wish," he said.

"But you can call me Samantha."

And after that Samantha didn't have a clue as to how to begin. Fortunately, Dykstra did.

"We *will* have to fight them you know," he began. "Now that we're able to get out to the Oort cloud we've become a threat to them."

"But I don't understand why it has to be that way," Samantha replied. "Space is so big. Why can't we just leave each other alone?" She stopped; she was arguing with the foremost genius of the age.

He was smiling. "Very good, Samantha. I thought if I made a blunt statement you'd forget about being intimidated by my reputation and just say what you thought. I'm counting on you to continue to do so." There was a gentleness to his manner, and yet a certainty in the way he spoke, that both put Samantha at ease and increased her already immense respect for the man. It was obvious that, even though he was a genius, he had no shred of egomania.

"So you don't think we'll have to fight them after all?"

"No. We *will* have to fight them, I believe. I said I was blunt, not that I was kidding."

"Your reasons?"

"First, why don't you take a seat, Samantha. I hope you don't mind the gravity, but my doctor insists that at my age, well, I think you understand." She sat on the couch, and he back in his comfy chair.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Now, as for my reasons. I think Rick Michaels is correct when he says the aliens are all through the cometary halo. It's hardly likely that there was only one ship, or only one refinery, or that he'd find them almost immediately upon arriving in the cloud."

"But even if they do occupy the halo, what difference do we make to them? We like it close in to the Sun, and for all practical purposes, they're living in interstellar space. Do we even have anything they want? And if we do, why haven't they attacked a long time ago?"

"Your points are well taken, Samantha. It's not at all unlikely that the cometary halos of nearby stars overlap each other. The aliens could very well be a truly interstellar race, living only between the stars. At least now." He paused for effect. "But what did they used to be?"

Samantha thought about it for a second, said, "They must have evolved on a planet—their physical structure allows no other conclusion. But that doesn't mean they're interested in stars now."

"But it's possible that they are. The prudent military man must consider that," Dykstra said.

"I almost forgot you're working for them, Doctor."

"You need not fear me trying to verbally coerce you into joining, Samantha. I'm genuinely interested in your opinions."

"Why, Doctor? I'm barely out of school," Samantha said, protesting, yet glowing inside. And she knew he was being honest.

"I'll get to that. But let me remind you that I was still *in* school when I first formulated the Dykstra field equations."

"I remember reading that."

"Another factor I've considered is the way they behaved when they first contacted OEV 1. We have two things to consider. The aliens have either encountered other intelligent life before us, or they have not. Assuming that the two who met Rick Michaels were representatives of the race as a whole, this does not look promising for either of the above cases. Should I spell out my ideas, or do you see my point already? I'd explain at length, but our time is limited," he said apologetically.

"I think I see," Samantha said. "In either case, it would make them xenophobes."

"Yes. Now my last major point is derived from an analysis of that refinery that Rick discovered on the comet. He'd actually managed to collect a good deal of data—emission spectra, photos, Dykdar scans—before the aliens attacked. It was apparently entirely self-contained and prefabricated, probably requiring no supervision or outside servicing at all. To me it looks like the sort of way station that might be placed on a frontier."

"Which means that they haven't attacked us earlier because they've only arrived in our neighborhood recently," Samantha finished.

"Yes, Samantha. At least, that's how it looks to me. As for other

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

reasons—perhaps of a less technical nature—did Rick tell you about his impressions of the aliens, particularly his description of how he feels we have nothing in common with them?"

"He did, yes. He was quite disturbed by it, I thought."

"Are you a religious woman, Samantha?" Dykstra asked.

Puzzled, Samantha said, "Sure. I mean, I believe in God and heaven, and I go to church now and then. Why?"

"So you believe you have a soul?"

"Yes. And maybe Rick didn't sense any common ground because the aliens don't?"

"You are delightfully quick, Samantha," Dykstra said, smiling.

"Call me Sammi now," she said. She liked this old, brilliant man.

"May I be so bold as to throw in an occasional 'Sunshine'? I see how you got that nickname."

"I'd like that . . . Chris."

"To answer your questions, I think it is possible that the aliens have no souls. But I have no idea how you go about proving something like that. The whole thing scares me." Dykstra got up then and brought them refreshments from the kitchen.

Looking at the clock, Dykstra said, "I see we're almost out of time. I have a meeting in ten minutes. Let me tell you a couple of other things.

"It's entirely possible that the aliens' faster-than-light drive —we're certain that they do have one—won't work deep in a gravity well. Perhaps they've left us alone up until now because they can't keep the advantage of FTL travel near the Sun. A young man named Arie Hague actually found a discontinuity in my own field equations for gravity. For any spherical gravitating body there's one unique distance from the center where my equations don't seem to work at all. It's called the Hague Limit. He spent half his career trying to figure out if the discontinuity had any physical implications."

"Did he succeed?"

"No. Or perhaps I should say, not yet. But I have an intuition that the alien FTL drive doesn't work inside the Hague radius, which, by the way, Hague calculated to be about 57.4 astronomical units for our Sun."

"But Chris, aren't they so far ahead of us technologically that it wouldn't *matter* whether or not they could use their FTL drive? I mean, aren't they *way* ahead of us?"

"You know, you're only the second person who spotted that objection without having it pointed out. And it makes perfect sense, except that I have examined some of their devices—"

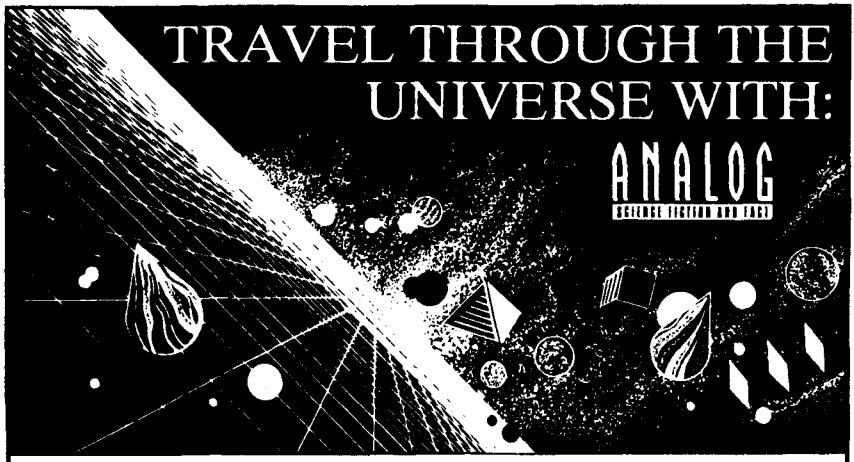
"Like what?"

"You'll have to sign up before I'll tell you that," Dykstra said.

"I see."

"Anyway, they are not *that* far ahead of us." He looked a little puzzled by that, even as he spoke, and he seemed distracted. "In fact, I saw a couple of obvious inefficiencies in one of the devices. . . ." but then he trailed off and wouldn't continue.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



Each issue of Analog Science Fiction & Fact blazes the way to bold new discoveries. The stories in Analog begin with a scientific base that stretches beyond your imagination. Start your subscription today and travel to distant places and times where fiction becomes fact.

Subscribe today and save over 28% off the basic price.

- ❑ Please send me 18 issues for $29.95-I save 28% off the basic price.
- ❑ Please send me 12 issues for only $20.97.
- ❑ Check enclosed
- ❑ Please bill me

BVSC-3

Name_____

Address_____

_____

Mail to:
Analog
P.O. Box 7060
Red Oak, IA 51591

Outside US & Poss. 12 for $25.97, 18 for $38.75. Price includes GST.

Please allow 6-8 weeks for delivery of first issue.

All foreign orders must be paid in advance in US funds.

We publish 2 double issues, in January and July. Each double issue counts as 2 issues towards your subscription.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He didn't seem like he was going to start the conversation again, so Samantha said, "Before I go you said you'd tell me why you wanted the major to get me on the project?"

He came back from wherever his mind was trekking. "Oh, I'm sorry, Sunshine. Forgive an old man for absentmindedness. The reason I want you for the project is that, of the other genano engineers I've seen, you have the most obvious intuitive genius."

"I'm not a genius," Samantha protested. "I'm good, but Chang is—"

"You're better than Chang, Sammi. Even he says so."

"But—"

"Trust me on this one, Samantha. I'm the smartest man in the world, remember? I recognize exceptional genius when I see it."

"Well . . . thank you," was all she could say. And though she denied it, she knew what Dykstra meant. She had always had a good *feel* for how to solve a problem, for which approaches made sense and which didn't, and hadn't realized until grad school that the level of her talent was virtually unique.

There was a buzz at the door; Lt. Nachtegall had arrived to take her home. She said her good-byes to Dykstra, but she knew she'd had more than just a unique encounter with a legend—she'd found a new friend.

Major Moore did not ask to see her before she left. Nachtegall took her straight home from the base and left her with a comm number to call to tell Moore her decision.

She had some serious thinking to do.

She was fixing herself a snack when she remembered she hadn't checked her mail yet today.

There was a letter from Steve.

Eagerly she brought the letter up, redirected the output to the big screen of her TV, and sat down just as the image of her husband formed. "Honey, you look so good," she said out loud. "I wish you were with me." She also noticed that he needed a haircut, and he'd lost weight.

Steve said: "Hello, my darling Sunshine. I'm sorry this is a few days late, but our . . . operations . . . had me tied up pretty thoroughly.

"I miss you, sweetheart. I want to be with you more than anything else in the Universe. Sometimes some of the other guys catch me staring out the port into space, and they say, 'Look, the Moon's come out again,' because they know I'm mooning over you. But I don't care. I love you, Sammi, and I always will.

"You know I can't tell you about what I'm doing, but this military service actually turned out to be kind of interesting. My talents are being well used. . . ." Her eyes were fixed on the screen, just looking at him, drinking him in. The pain of their separation tore at her even as she melted inside while he spoke of the infinitely important mundane, important because it was all about him.

She wanted him back so badly. *Damn war,* she thought anew.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"... should be back on leave month after next, Sammi. They're giving me a whole week! Oh hon, the *things* we'll do!"

"You got that right, lover," Samantha said.

"I have to finish this letter up now. I wish I were there with you, darling. I know you tell me what's up in your letters to me, but I want to know what you're doing every minute, what's making you laugh, if anything is making you cry, what you're worrying about ... just everything. I want to wrap my arms around you and hold you so tight I can feel your heart beating next to mine, rub my hands up and down your back, and kiss you ... oh, and kiss you.... "

"Me too, hon. Me too," she whispered, tears welling.

"Good-bye, Sunshine. Until next time." And the letter was over.

She had a good cry after that. She replayed the letter five times before going to bed, and for the first time in what seemed ages, her last thoughts before drifting off to sleep had nothing whatsoever to do with Major Moore, and everything to do with Steve.

She had another dream.

It was somewhat of a nightmare, but not the scary kind—more of the "something gone wrong" type. She found herself on the surface of Mars, without a suit, and she was watching her symbionts at work, an easy thing to do since they were the size of bulldozers. But something wasn't right—the symbionts were going down to the river, which itself was the result of a different project, and splitting the water molecules up, then bringing the oxygen atoms to the desert and making iron oxide. "What are you doing?" she cried. "You're doing everything backwards!" And a bulldozer symbiont came up to her, and somehow it reminded her of the aliens, and it said, "But it's so much easier to do it this way. It's almost as if the iron *wants* to rust." And the words echoed through the last vestiges of the dream: Wants to rust; wants to rust; wants to rust; iron wants to rust....

She awoke with a start. The meaning of the dream flooded into her.

It was Sunday morning. Since her conversation with Dykstra the previous day, she had made up her mind to attend church this morning, something she'd lapsed in since Steve's departure. But she had to sort this out. She went to her workstation and immersed herself in the work of the genano engineer. She looked at the structure of her new symbionts, played with some different assumptions, had the computer test theoretical modifications, and by 1500 hours she had the answer her intuition had told her was there during the dream.

She had a weapon against the aliens—she could make their bones rust.

It wasn't really difficult. A few changes would allow her virus nanotool users and their hosts to live in the aliens themselves. I haven't

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

even agreed to work on The Phinon Project yet, and already I know exactly what I'd be doing, she thought. I'd better make up my mind about what I'm going to tell Moore.

Saying no would be harder now. The temptation to prove herself yet again was overwhelming, particularly now that she knew how to do it.

Samantha went to work on Monday with a bounce in her step, and wearing her most sunshiny smile. She'd played Steve's letter two more times before retiring last night, and let the thrill of his upcoming leave drive out any fears or concerns about how she was going to answer Major Moore. She would put those concerns on the back burner for a few days and think just about her husband, and about her successes with the Martian atmosphere project.

But while she was taking readings on her cultures, Martha came up and started in on her about her weekend.

"Hi, Martha," Samantha said. "Guess what? I finally got a letter from Steve, and he's going to get leave in a few months!"

"That's wonderful, Sammi," Martha said, but there was no hint in her voice that she wanted to talk about Steve right now. If anything, she seemed nervous about something, tense, as if something was preying on her mind and she didn't know quite how to bring the subject up, yet knew she had to.

"What's the matter, Martha? I can tell something's troubling you."

"Can you tell me what you decided this weekend, Samantha?" Martha got out haltingly. "I mean, did you decide to work for the military?"

"Well, Major Moore introduced me to some people who felt strongly that I should join up, but I haven't made up my mind yet. I know the work will be interesting, but I don't know if it would be, uh, right, for me to work on it. You know, military projects are always about killing, and I just don't know if I want to be connected with that." Samantha looked at Martha carefully, knew the older woman had something she wanted to tell her about . . . very badly. "You have some strong feelings on this, don't you?"

"I don't want you to join, Sammi. I don't want to lose you to them, too." She put her arms around Samantha, held her very tightly, was crying. Samantha hadn't had any idea that Martha was carrying around some hidden pain, but she let the woman cry herself out on her shoulder, and then helped her to a chair when she was ready to talk again.

"I'm sorry for that, Sammi," she said, wiping tear streaks from her cheeks. "It's just that, my daddy was in the Patrol, years ago. I think I told you that. He loved it, he really did. But that was during the Belt War of Independence. I was only ten when he was killed at the Battle of Ceres. I was only ten, and I didn't

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

understand, but my mom said he'd died for something important, something he believed in . . . solar unity. I didn't know what that was, and I didn't care. But then two months later they signed the Vesta peace treaty and the Belt got independence anyway.

"He died for nothing, Sammi. Nothing." A whisper.

"I'm so sorry, Martha. I didn't know," Samantha said softly.

"That's not all of it. My daughter joined the Patrol, too, when she was just nineteen. She would have been about your age now, Sammi. The military killed her, too. She was in one of those police actions you hear about, but never know the details of. She died on Ganymede." Martha was openly crying again. "They didn't even have a body to send back to me," she choked out.

Samantha cried, too.

"And you're, you're like her. So bright, so shiny, so sweet. When you first came here it was almost like having my Shelly back. That's why I've practically adopted you." And Samantha remembered the past couple years: the gifts from Martha on her birthday; the long talks, like she'd had with no one else except her own mother; the invitation to Christmas dinner for her and Steve. "I don't want you to go and be lost, too."

Samantha made up her mind. "I won't go, Martha. I won't. I'll tell them no. I'll call Major Moore tomorrow and tell him no. I promise."

"Thank you, Sammi. I love you, little girl."

It was another hour before they actually got back to work.

Samantha felt wonderful when she returned home that evening. She felt comfortable with her decision, too, and now that she'd made up her mind, it was like a weight had been lifted from her shoulders. She was still fascinated with the aliens, of course, and she would have loved to work on understanding the alien biology, but she consoled herself with the knowledge that sooner or later, without the entanglements of the military, she'd get her chance. Eventually the existence of the aliens would be made public, and then she could study them in the comfort of an academic atmosphere.

And in the mean time, there was all of Mars to turn habitable, billions of tons of oxygen to liberate, and she was just the woman to see to it since her symbionts were clearly living up to expectations. She would be so happy to show Steve her work.

Shortly after another dinner in front of the TV, she was watching Steve's letter again when there came a buzz at her door. She left the letter running as she answered it. Outside stood a captain in the Patrol, or at least that's what she thought the insignia meant. She didn't recognize the badge the man wore on his left breast, though; the broken spaceship with black ribbon.

"Yes?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

TECHNOLOGY UPDATE

Now have music in every room... without wires!

New wireless technology broadcasts music through walls, ceilings and floors.

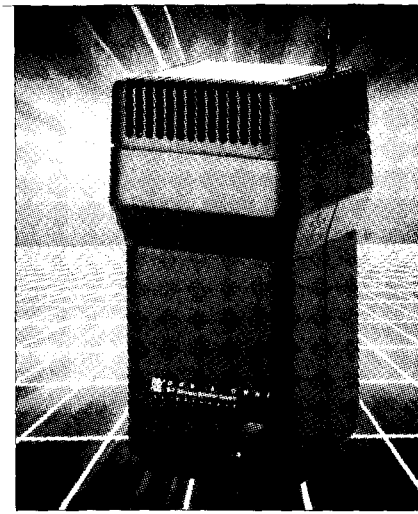
Ever drag your stereo system into another room of your house just so you could listen to it? Probably not. Most people can't afford to risk ruining their equipment. With these new wireless speakers, you won't have to. Now you can listen to music anywhere in or around your home without lugging around heavy equipment or stringing wires.

Imagine listening to your favorite CDs, records, tapes, radio station or TV show anywhere in your home. Imagine stepping into the shower, pool, or hot tub and having a self-contained wireless speaker right there with you.

State of the art sound. These patented wireless speakers work with any stereo, TV, or VCR. And wait till you hear how they sound...the deep, rich bass, the crystal clear highs. You'll get the perfect volume for any room because each one has its own volume control on/off switch. These wireless speakers are also self-amplified, so they can't be blown out.

Easy installation. The powerful Datawave transmitter plugs into a headphone, audio-out or tape-out jack on your stereo, CD player, VCR, or TV. Use *one* transmitter to send both left and right channels to an unlimited number of speakers. Or use *two* transmitters to send the left and right channels separately for full stereo separation on at least one pair of speakers.

'No Questions Asked' guarantee. You get a *complete "No Questions Asked" 30 day money-back guarantee.* Plus the Datawave speakers come with a 90 day manufacturer's warranty.



The Datawave wireless speaker breakthrough This amazing water resistant speaker has its own built in receiver and amplifier. Utilizing FM technology for a 150 foot range through walls, it contains a "vertically suspended" base reflex speaker providing a 360 degree surround sound pattern. Designed in an "acoustically balanced" bookshelf size (8.5H x 4.5W x 4.5D") it operates on four 'C' batteries or with an optional AC adaptor.

Factory direct offer. For a limited time, we can send these Datawave speakers directly to you far below the $149 retail price...

Datawave Transmitter* ..... **$29** **$2** S&H
Datawave Wireless Speaker ..... **$79** **$6** S&H
Extra speakers ..... ***$10 off each***

**You will need at least one transmitter to operate your speakers. To receive this special pricing you must mention promotional code* AS1113.*

For faster service, call toll-free 24 hours a day

800-992-2966

VISA MasterCard DISCOVER

To order by mail send check or money order for the total amount or enclose your credit card number and exp. date (VA residents add 4.5% sales tax). Send to:

COMTRAD INDUSTRIES
2820 Waterford Lake Dr. Suite 106 Midlothian, VA 23113

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Ms. MacTavish?"

"That's right. If you're from Major Moore's office, you can tell him that I'll call him tomorrow, but my answer is no." She was eager to get the words out, to make her decision real.

"I'm afraid I don't know any Major Moore, Ms. MacTavish." The voice was solemn, and the man looked uncomfortable. "My name is Capt. John Kleck. I'm from the Department of Civilian Relations, spouse division. May I come in?"

"Certainly. I'm sorry for not saying so earlier." Perplexed, she led him into the apartment. He declined refreshments, and they both sat down. Samantha muted the sound from Steve's letter, but left the visual on.

"Ms. MacTavish, I'm afraid that it's my official duty to notify you of some unfortunate news."

Samantha stiffened, felt cold all of a sudden.

"This isn't about Steve, is it?" she asked, but she couldn't keep the fear out of her voice.

"Yes. I'm afraid it is. I'm sorry, Ms. MacTavish. Your husband is dead."

"No," she said, but no sound came out.

"He died in the line of duty, Ms. MacTavish. He served in the finest tradition of the Fleet." The hammer blow had fallen. A million questions flashed through her mind: How? Why? Where? When? Could there be some mistake?

"You killed him," she said. "You military bastards killed him!" she screamed. "You let him die in your stupid, mindless, idiotic farce you call war!"

"Ms. MacTavish, please—"

"Get out! Get out now! Go! Go!" she screamed at the man, and he left as she dropped to the floor, sobbing helplessly. She looked over at the TV screen, saw Steve silently mouthing, "... but I want to know what you're doing every minute, what's making you laugh, if anything is making you cry, what you're worrying about...."

Eventually she composed herself enough to call Martha, who stayed with her the rest of the long, hopeless night.

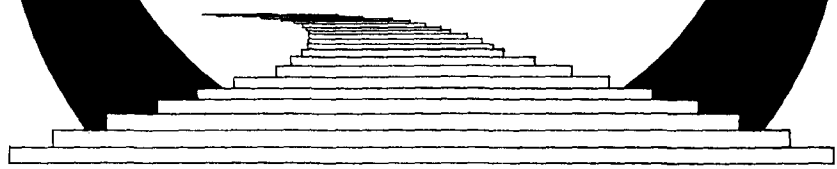
The next days were a blur of undifferentiated activities, undifferentiated in that they were all just things that happened in that long, sickening period "after Steve died." Friends visited. Along with Martha and her husband came Mike and Terry, longtime friends of Steve and fellow suicide orbiteers. Her mother came up from Earth to be with her, aunts sent sympathy cards, and her in-laws also came. There was a good deal of crying, and a sharing of stories about Steve, and surprisingly, there was some laughter, too. Major Moore sent his condolences, and at the memorial service, she saw Chris Dykstra sitting discreetly in the back. When the ceremony neared its end, the black veil was dropped over the plaque that would be attached to the cross of lunar glass out in the military cemetery at the edge of the Sea of Tranquility.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Asimov's
SCIENCE FICTION

ENTER ANOTHER DIMENSION.

Explore worlds of imagination with stories by Roger Zelazny, Robert Silverberg— and, Connie Willis



SUBSCRIBE NOW AND SAVE OVER 28% OFF THE BASIC PRICE

❑ Please send me 18 issues of ASIMOV'S SCIENCE FICTION for only $29.95--I save over 28% off the basic price.

❑ Please send me 12 issues for only $20.97.

OR CALL 1-800-333-4108

☐ Payment Enclosed ☐ Bill Me

☐ Charge (Circle one) MasterCard VISA

Name _____

Address _____

City _____

State _____ Zip _____

Card# _____

Exp. Date _____

Signature _____

Outside US & Poss 12 for $27.97, 18 for $39.97. (cash with order US funds). Price includes GST.

Mail to: **Asimov's**
P.O. Box 7058
Red Oak, IA 51591

We publish two double issues in April and November.
Each double issue counts as two issues towards your subscription.

MVSC-7

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

There was no body to bury.

She returned to work after a week. Her research still went remarkably well, but her excitement and sense of purpose had vanished. Friends told her it would take time, but she wondered if there was any truth to it. Martha treated her very much as her daughter, and in some ways, her helping Samantha during the mourning helped her work out some of her own grief and bitterness.

But in the evenings, Samantha returned to an empty apartment, to see Steve's things, to have every room remind her of episodes when they'd laughed together, eaten together, or loved together. And there was nothing for her to do except helplessly tolerate it.

It was two weeks after she'd heard the news, in the evening, while Samantha sat staring at the walls, not crying, not laughing, not feeling anything but a numb hollowness inside, that Dykstra came to visit.

She answered the door and found the old man standing outside with a cane pressed firmly against the floor, a very simple, utilitarian piece that very obviously had once been a tree branch. "Hello, Sammi," he said. "Let an old man with a walking stick in?"

"Of course, Doctor Dykstra." She motioned him in. "Pardon the mess, but I haven't been much into cleaning lately."

"I am as sorry as I can be, Sammi. At my age, I've lost a lot of people who were dear to me. Practice never makes it any easier."

"Thanks. And thanks for coming to the funeral—it meant a lot to me." She looked at the man standing there with his walking stick, and even though he was in the hated military, she could hold no blame against him. "Take a seat, please," she said. "Would you like me to turn down the gravity?"

"I would be more comfortable. Thank you." She did, and in a moment was sitting across from him.

"So, Doctor, were you just out visiting widows tonight, or did you have some other reason for coming?" She hadn't wanted to sound bitter, or suspicious, but she couldn't help it.

"No, Sammi. I know you're wondering if I'm here at the request of Major Moore, but I am not. I came for personal reasons. The major has given up on you."

"Thankfully, I'll bet. That's fine. I won't work for the goddamn military—bunch of little boys slaughtering each other, and for what?" She had an answer, but she stopped herself, not wanting to get herself worked up.

"Samantha, please. I only want to tell you how Steve died, what really happened."

"I thought his ship was just destroyed. They didn't have a body to return to me."

"Sammi, Steve didn't die in the war—the aliens killed him."

"What?!"

Dykstra laid his cane across his legs and continued. "I'm not sup-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

posed to tell you what I'm about to tell you. But one of the advantages of being me is that I can get away with it. Steve wasn't on a battleship, Samantha. People with his talents aren't used that way. He was working on something called Slingshot. It's another one of those secret projects and it's based on a little sliver of rock sixty astronomical units out."

"That's beyond the Hague limit, right?"

Dykstra's eyes lit up and he smiled. "Yes, Sammi. You see it already. As I was saying, Slingshot involved sending kinetic kill projectiles on ultra close approach trajectories past airless bodies, your husband's unique field of expertise. Massive, fast moving bodies are still the best way to crack through a Dykstra shield, and it was hoped that this method could be used to attack some of the Belt military installations.

"But that work is moot, now." Dykstra paused and just shook his head.

"Was Steve good?" Samantha asked.

"His work was brilliant, Sammi." Dykstra's eyes glistened; he was holding back tears.

He continued. "Four weeks ago the Slingshot base was attacked by two alien ships, apparently identical to the one that attacked OEV 1. Slingshot isn't heavily armed. When general quarters sounded, Steve was ordered to leave in a life boat. Apparently he was able to watch the attack as he fled. Slingshot was getting hammered. Steve . . ." The old man stopped, choked up. Samantha came and sat next to him.

"What, Chris? What did he do?" She knew, but she had to hear it.

"He was clear, Sammi. He could have escaped. But he turned around. He knew . . . he knew he could . . . he could take out one of them. . . ." He was too overcome to go on for the moment.

"He rammed their ship, didn't he?"

"Yes, Sammi. Their shields are almost identical to ours. He knew what to do. He rammed their ship. That's why there wasn't any body to send back."

They held each other and cried for a while.

Later, wiping away the tears, Dykstra said, "I apologize for the emotional display, Samantha. I've always had a weak spot for heroes."

"It was like him. His favorite verse always was John 15:13."

Dykstra nodded, understanding. "There's a bit more," he said. "After he rammed the one ship, the other fled immediately. We have some very good data on that. It took off with an apparent acceleration of over 200 million gravities. That's to be expected in a transition to hypervelocities. . . ." The old genius was looking off at nothing again, lost in thought.

"How do you know that's to be expected, Chris?" Samantha asked.

He came back. "I *see* it, Sammi," he said, passion blazing in his eyes, young again. "I see how it works in my mind. The principles are start-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ing to lay themselves out to me."

"You're going to give us a faster-than-light drive, aren't you, Chris?"

"Both Steve and I will, Sammi. I can't be certain, but Steve knew all there was to know about how a Dykstra shield collapses when struck with sufficient energy, and when struck at different points. His impact tore off the front of the alien ship, but it left the drive section intact. He would have known how to insure that.

"That drive unit is on the Moon now. I have it. The men who brought it in told me the story."

They were quiet for a while, each with their own thoughts, then Samantha, staring into the blank TV screen, said, "Did you think I'd decide to join The Phinon Project when I heard the story, Chris?"

"That wasn't my reason for coming, Samantha. You had a right to know how your husband died. That's all."

"But you accomplished the other." She turned to face Dykstra. "I don't like war, Chris. And I don't like the military. But I've let all of you try to convince me to sign up because the aliens are the most exciting thing to come along since . . . maybe forever. I wanted you all to give me an excuse to salve my conscience, make it so that I could work for you but not soil myself."

"But we didn't succeed."

"No. I don't know if the major is right, or if Rick is right . . . or even if you're right, Chris. Does it have to be war? Are all the aliens the same, or are these just the bad guys? All I know is that Steve . . . " She reached up to brush a tear away. " . . . is that Steve . . . could have gotten away, come back to me. But there was something more important he had to do."

Dykstra waited until she could talk again. "There's more, isn't there, Sammi?"

"Steve made his decision. When he turned back he joined your side. I'm going to finish what he started. But I'm scared, Chris. I . . . "

"Why?" Gently.

"Because right now I want to kill them. I know how; I know how to rust their bones right out of their bodies. But what if I'm fooling myself? What if I really only just want revenge?"

She looked into Dykstra's eyes; those old, sparkling, wise eyes, and saw something behind them, perhaps something the genius remembered.

"You don't, Sammi," he said. "I *know*."

He got up then, drove his cane smartly into the floor. "So what do I tell the Major? Sunshine goes to war?"

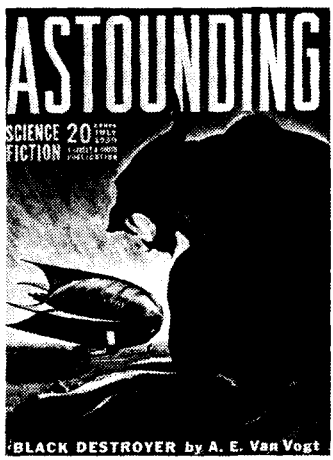
She'd have to explain to Martha, she knew, explain the reality that Martha's father and daughter had known. It would hurt, but she would do it.

"Sunshine goes to war," she said. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A TREASURE FROM THE GOLDEN AGE OF SCIENCE FICTION!

A Hardbound Copy of the July 1939 Edition of ASTOUNDING!



Critics mark this issue as the first "great" issue edited by John W. Campbell, Jr. It contains the first published story, "Black Destroyer," by A.E. van Vogt and the first story by Isaac Asimov to be published in **ASTOUNDING.**

This hardbound facsimile of the July 1939 issue also contains an Epilogue in which A.E. van Vogt, Asimov, and Rocklynne comment on their own work, their feelings towards **ASTOUNDING**, and especially their relationships with John W. Campbell, Jr.

This classic collector's item is now only **$9.95** but act fast, supply is limited. Please send my 1939 **ASTOUNDING** to:

Name_____

Address_____

City_____ State_____ Zip_____

Send check or money order (No COD's) to: Analog, P.O. Box 40, Vernon, NJ 07462
Canadian or **Foreign** orders add **$5.00.** Allow 6-8 weeks for delivery. MVAN-3

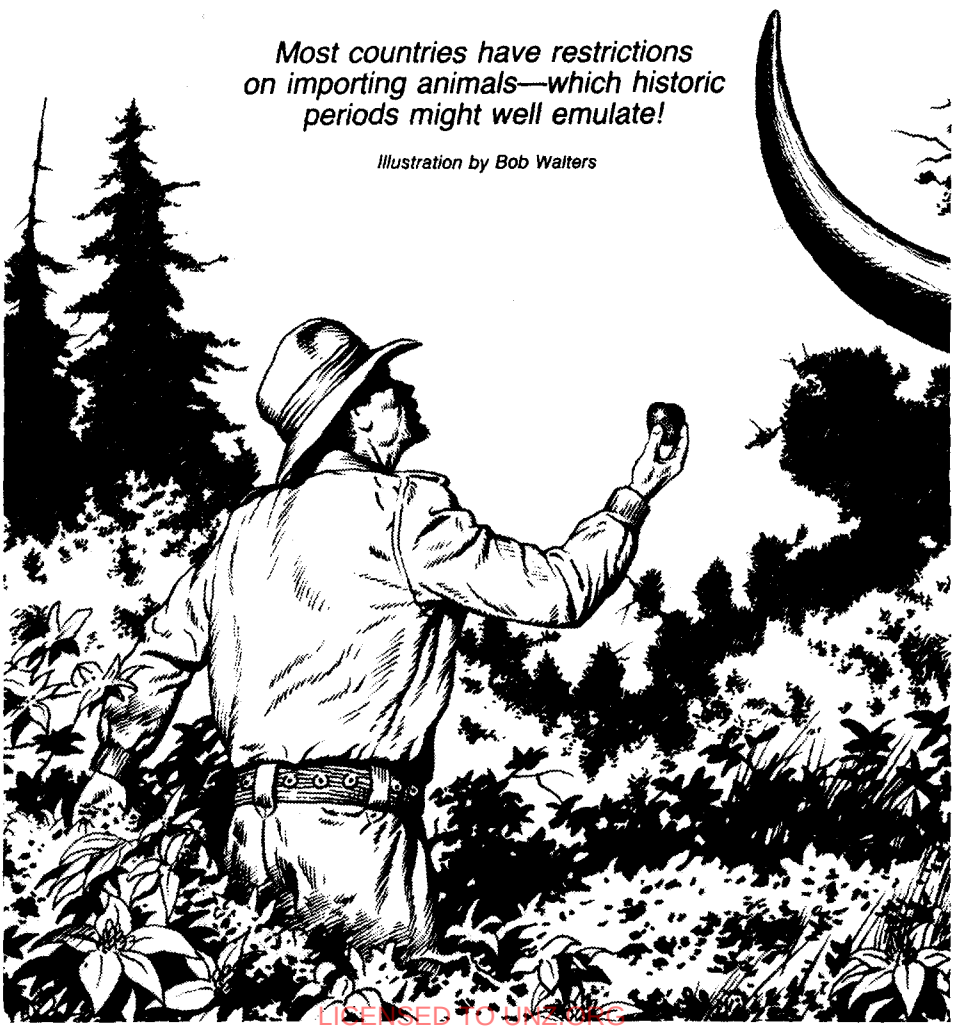
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

L. Sprague de Camp

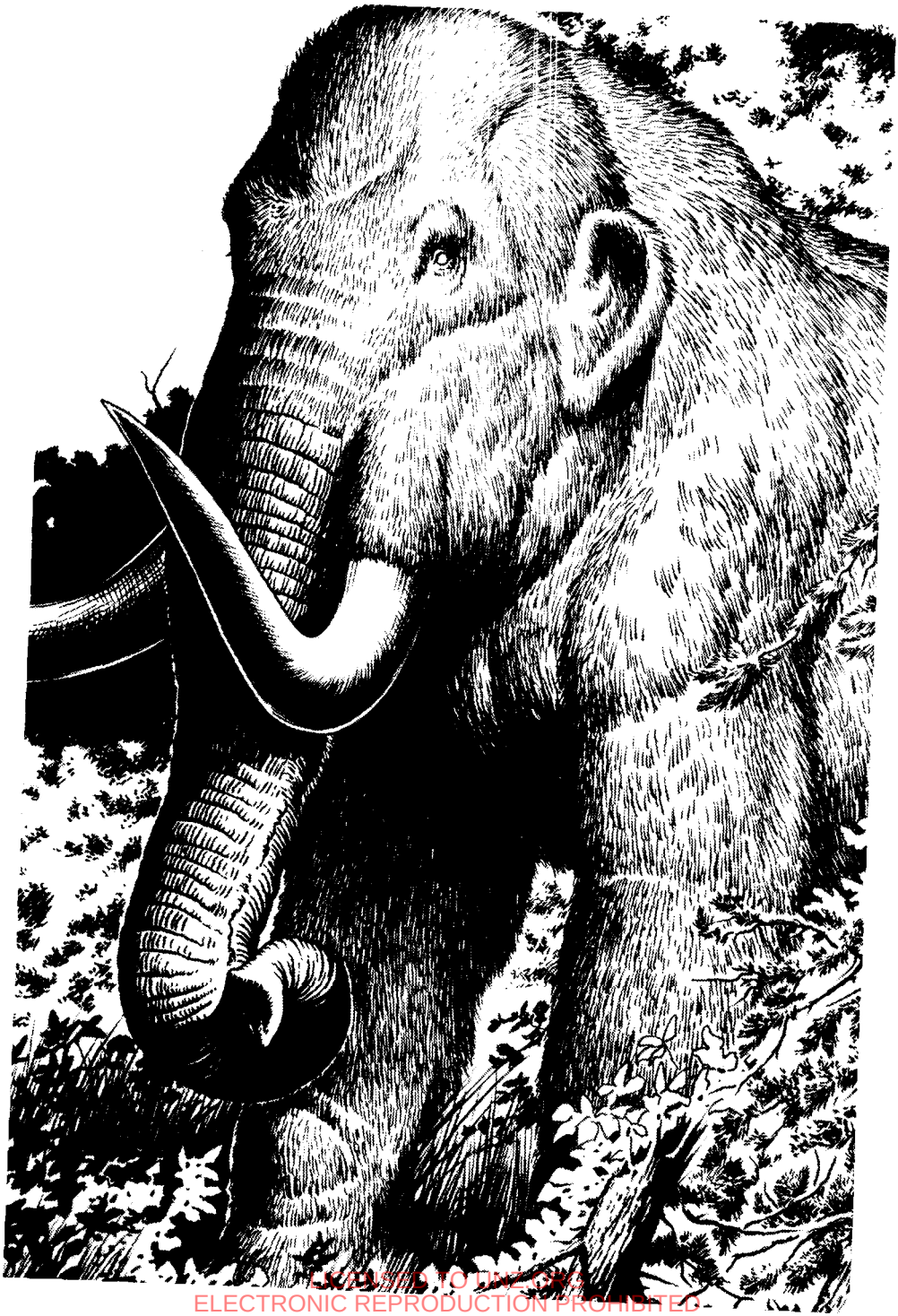
THE MISLAID MASTODON

Most countries have restrictions on importing animals—which historic periods might well emulate!

Illustration by Bob Walters



LICENSED TO UNSW
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Eh, Mr. Schindler? What has given us the most trouble, not in prehistoric times, but right here in Present? Well, there was that lawsuit by the relatives of the Reverend Hubert after the silly galah got himself pecked to death by a *Diatryma* in the Eocene. Then there were those hearings before the Missouri Senate, where the fringe nuts argued that time safaris were a plot to discredit the Bible, or to change history and make us all go *poof*, or to violate the rights of animals.

The oddest objection, however, came from the hunting ranches. You know, those places where, for a few thousand, some urban bloke who has never taken ten steps off the footpath can shoot a tame lion as it comes up to lick his hand, and then pose for photographs with a foot on the carcass. Then he hangs the picture on the wall of his apartment. When he's got a dollybird in, he can use the picture to show what a macho hero he is and soften her up for horizontal sports. If that's sport, I'm a bloody ballet dancer!

These game ranchers did well for a while, with the disappearance of all the real wild lands except for parks and preserves, where the beasts are protected. The technique of breeding animals has got to the point where you need only a few of any species and you can keep your breeding group furnishing more specimens indefinitely.

Once Professor Prochaska got his transition chamber working, all the real hunting sahibs wanted to go back in time, shoot some local fauna—especially mammoth and dinosaur—and bring back heads and hides to prove it. So the game ranches had been going broke, and they hired a lobbyist to stop time safaris.

The lobbyist for the Game Ranch Association was a bloody shrewd lawyer named Jason Eckler. He made a pitch against importing fossil fauna to the Present.

The Raja and I had brought a couple of stenonychosaurs back from the late Cretaceous. These are man-sized theropods—flesh-eating dinosaurs. That Wildlife Park in San Diego reports that they have bred successfully. The Park people are all of a twitter over a half-dozen little stenos running around and snatching each other's meat rations.

Now there was talk of fetching something more ambitious. Each year the Raja and I find that fewer of our clients want to kill anything, and more who prefer just to study, photograph, or watch the beasts, or wish to bring them back to Present alive, as we were trying to do.

This bloke Eckler spoke of the dangers of importing exotic fauna, of which a pair might get loose and fill the country with their descendants. He cited the starling, the walking catfish, the Mediterranean fruit fly, the kudzu vine, and so forth. He pictured America overrun with tyrannosaurs stalking and gobbling citizens.

In my turn, I pointed out that the same objection applied to bringing in any exotic species, as for zoos and circuses. In fact, some game

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ranchers had imported Asian deer, which had got loose and out-competed the native deer. Australia well knows these dangers, as witness our troubles with imported rabbits and foxes.

Then another cove whom I knew took the stand. He was a big bloke with a ruddy complexion, conventionally dressed except for long black hair hanging down his back. He was Norman Blackelk, a Native American of the Crow or Absaroka tribe. He, a lawyer, headed the Red-integration Society, which was footing the bill for our mastodon hunt. On the stand, he explained that it was a matter of conscience with him to try to restore as much as possible of the North American Pleistocene climax fauna. The theory is that Blackelk's ancestors had come over from Siberia twenty or thirty thousand years ago. Finding the continent swarming with mammoths, mastodons, ground sloths, camels, horses, and other big, edible creatures that had never learned to cope with men, they killed and ate the lot. When the big mammals—the megafauna, my scientific friends call it—were nearly all gone, along with the lions and sabertooths that preyed on them, the invaders starved until they learned to grow maize and beans and to trap smaller beasts like marmots—woodchucks, I think you call them.

Another witness was Horace Dunbar, a lean, weatherbeaten bloke with a potbelly overhanging his belt and a Texan accent. He owned a game ranch, and he told a pitiful tale of how he had worked long and hard to put his children through college, and now these foreign coves were going to bankrupt him with their devilish time-travel contraption. Had a couple in the audience shedding a tear.

After the hearing, the Raja and I—that dark chap you met when you came in was my partner, Chandra Aiyar. I call him "Raja" because by descent he actually is one, if anybody paid attention to that sort of thing nowadays. We went down with Blackelk to unwind, taking a table for four. Presently Eckler, finding all the stools along the bar taken, asked if he might sit at our table. I said, certainly.

"No hard feelings?" he said. "I'm just an advocate, doing what the Game Ranch Association pays me to do."

"I understand," I said. Then the Raja, who is a near-teetotaler, excused himself and went away to meet his wife. Eckler said:

"May I offer a small piece of advice, Mr. Rivers?"

"Sure, if you like," I said. I looked sharply at him, wondering if the next remark would lead up to a threat or a bribe offer. "Is your meter turned off?"

He laughed. "Oh, I'm not charging for this. I was going to say, next time you're on the witness stand, speak a little more slowly and distinctly than normal. As it is, that Australian accent causes some Americans to miss an occasional word."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Thanks; I'll try," I said.

Then Eckler, looking round, spotted Dunbar searching for a place to sit. He called: "Hey, Horace!"

Soon Dunbar, after apologies, occupied our fourth chair. After a bit of persiflage, Dunbar looked at me through narrowed eyes.

"Mr. Rivers," he said, "do I understand rightly that your next safari won't be for hunting, but to bring back one of them mammoths or mastodons to the present world?"

"That's right," I said. "Mr. Blackelk hopes to get enough of these Pleistocene animals to establish breeding herds."

"We aim," said the Native American, "to start with *Mastodon americanus*, a once very common, successful species. It will have to be young, because the transition chamber isn't large enough for a full-grown specimen; likewise with the three species of mammoth of the North American Pleistocene."

Dunbar gulped his third drink—he was a two-fisted drinker—and said: "I've got a client who'll pay a hefty five-figure sum to shoot one of them mastodons."

"Well then, send him to Rivers and Aiyar, Time Safaris," I said.

"No, that won't work. This guy's got a phobia, I guess you'd call it, about your time machine. He's mortal afraid it'll get him back to some ancient time and then break down, leaving him stranded millions of years back. He's had a couple of experiences with machines that make him leery—an airplane forced to land in a cow pasture, or a train that ran off the rails, or a ship that went aground. And he figures time travel's the trickiest of all."

"It's always worked for us," I said. "We've made dozens of time trips in it, and it's never failed to fetch us home to Present."

"That don't make no difference. This client's got his mind set and wouldn't listen to you. How about if you was to bring your mastodon back to now and then sell him to us?"

"Hey!" said Blackelk. "You mean so you can stake it out for your client to walk up and shoot?"

"Sure. This guy's crazy mad to kill an elephant, irregardless of how he does it. Only nowadays there ain't no elephants for shooting. The few that still live are all numbered and watched over like so many prize chickens, both the African and the Asiatic kinds. There's no place you're allowed to shoot one. One of my customers tried poaching, and the rangers shot him dead. Well, Mr. Rivers, how about it?"

"I'm not interested in that kind of 'sport,' " I said. "Anyway, the animal will be the property of Mr. Blackelk and his Redintegration Society."

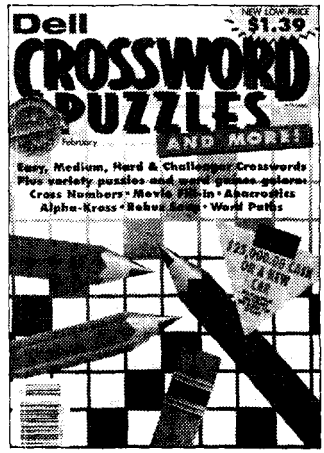
"And you can be damn sure we wouldn't consider any such deal," said Blackelk. "We're trying to restore the species, not exterminate it a second time over."

Dunbar, by now, had had four or five drinks. He growled: "All right, you snotty sons of bitches! I'll show you! Gonna put me out of business, eh? After I've spent my life trying

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

CLUE: **IT WILL TANTALIZE AND CHALLENGE YOU EVERY MONTH**

ANSWER: **DELL CROSSWORD PUZZLES**



Each issue is packed with Crossword Puzzles from easy to challenger; Variety Puzzles such as Cross Sums, Anacrostics, Kriss Krosses and much more!

Subscribe today and receive **24** issues for only **$29.94** or **12** issues for **$15.97**.

Send your check or money order to:

Dell Magazines, PO Box 5151, Harlan IA 51593

or

CALL TOLL FREE 1-800-888-6232

Please allow four to six weeks for your first issue. Outside U.S. and Poss. add $3.00 per year. U.S. funds only.

MVNC-4

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to build up an honest sporting establishment—"

Eckler grabbed Dunbar's arm and squeezed hard, saying: "Shut up, Horace! This is your lawyer speaking!"

Dunbar subsided, belched, and mumbled: "Sorry, guys. Guess I let my feelings run away with me. Anyways, I gotta go. Put my drinks on your bill, Jason. See y'all." He rose and staggered off.

The first job in our mastodon hunt was to adapt Prochaska's transition chamber. A full-grown American mastodon would stand about two and a quarter meters high at the shoulder and be perhaps five and three-quarters long. That's not so tall as a big modern bull elephant, but it is longer in the body and about as heavy.

Prochaska was dubious about our taking liberties with his precious transition chamber; but he became enthusiastic at the prospect of hauling an endless series of extinct organisms back to Present. That is how it has worked out. He hovered over us while our workmen took out the chairs that the passengers normally sat in during the transition. Then we put a row of stout steel bars round the chamber wallah's corner, so that none of our animal cargo could lay a claw or a fang on Bruce Cohen while he handled his controls.

As usual, these modifications took twice as long and cost twice as much as estimated. For one thing, we needed a pen to hold the animal back in Present until the Redintegration people could come and take it away. Since the local zoo didn't have any vacant pens we could borrow or rent, I rounded up some carpenters and bought some lumber: good, stout ten-by-ten centimeter timbers. The carpenters assembled these on the university grounds and bolted them together, with the sides cross-braced in case the animal tried to push one of his walls over.

As an example of the unforeseen delays that bedevil such a project, we were talking with Joseph Hockersmith, a specialist in catching wild animals uninjured for zoos and scientific institutions. When he saw Cohen's cage being assembled, he cried: "Hey! You've got to put padding on those bars!"

"Eh?" said I. "What for?"

"You want to catch a member of the elephant tribe, don't you?"

"Yes," I said, "though there's a question about calling a mastodon a member of the elephant tribe, since elephants are descended from mastodons."

"But he'll have tusks, won't he?"

"If he's a two-thirds grown one, he will."

"And you'd like to deliver him with tusks undamaged, wouldn't you?"

"Righto!"

"Well, if you put the beast in a cage with iron bars before he's had a chance to get used to you, he'll be so angry and frightened that he'll bang his tusks against the bars hard enough to break them. He'll arrive

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

in the Present with only the stumps. I've handled elephants."

So we had to hold up proceedings to pad the bars and also to hang sheets of that quilting that moving men use in their vans to keep the furniture from damage.

At last we assembled in the chamber building: the Raja and I, Norman Blackelk, the cook Ming, and our crew. These were Beauregard Black, the crew boss, and his helpers Pancho, Bruno, and Rodrigo. Then there were Hockersmith and his three assistants, and one more man: a young cove, Wilmer Delarue, whom the University of Minnesota had sent us. A graduate student and assistant instructor, Delarue was bucking for his doctorate in paleontology. We were always glad to have a real scientist on these safaris, because it gives certain tax advantages.

There had been a number of such young blokes on our *safariin*, some easy to get along with and some not. Delarue seemed a harmless chap except for a know-it-all tendency to set everybody right on details, such as the pronunciation of words like *Apatosaurus*. When Norman Blackelk pronounced it with the accent on "pat," Delarue picked him up and said the word should be stressed on the "ap."

"Wilmer," said Blackelk, "the most successful lawyer I've known, when a client came in to hire him and the client mispronounced a word, this lawyer in later conversation used the same mispronunciation, even though he knew better."

"That's why the language goes all to hell," said Delarue.

We hoped to scare up mastodons near enough to the chamber site so as not to need to shift camp. Therefore we did not bring a train of asses to haul our stuff around the outback. We thought that, if we had to move camp, we could send the chamber back to Present with Black and his crew to fetch them.

As a last-minute addition, Hockersmith's boys brought a barrel of apples, which they manhandled into the chamber. Hockersmith explained: "This is my bait. Don't let any of your people swipe them. With elephants, I never found anything that brings 'em round so fast as ripe yellow apples. They love 'em. The only thing that would fetch them quicker would be the fruit of the umganu tree of Southern Africa. It ferments as it ripens, and the elephants there get drunk on 'em. I didn't have any umganu fruit, and perhaps it's just as well. A sober elephant is problem enough to handle, so you can imagine what it would be like with a drunken one!"

"Bloody good idea," I said. We filed into the chamber, and off we went.

By then, departure was pretty much routine. The dizziness of transition through time caused one of Hockersmith's men to lose his breakfast. He managed to keep it in until the Raja passed an airsickness bag back to him. Cohen had taped envelopes of these bags to the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

backs of the seats; but then the chairs were taken out, and nobody gave the bags a thought. Bruce Cohen's as fussy about keeping his chamber clean and shipshape as anybody's maiden aunt, so he had laid in his own supply.

I had told Cohen to set his dials for one million years before Present. That was the closest Prochaska's scientists would let users of the chamber come to Present. They didn't want to have time travelers meet Blackelk's ancestors coming over from Siberia. Such a meeting would affect later history and cause a paradox. To prevent that, we should all be thrown back to Present, *boom!*, and killed in the process.

Actually, I am sure that a setting of half a million B.P. would not impose any risk, since all the evidence is that the first Red Indians arrived in North America well after 100,000 B.C. But Prochaska's committee of experts insisted on an extra-wide safety factor.

Cohen found us a nice, soft landing place. He can't move the chamber horizontally, but by hunting back and forth in time he can find a period when the site is flat and hard enough to provide a safe alighting. The landscape of 1,000,000 B.P. looks hardly different from those national forests of today, all named after Mark Twain, across southern Missouri. This state is pretty bloody flat with a little roll, but nothing an American from a western state would call a mountain. The highest place is a hill in Iron County called Taum Sauk Mountain, less than 500 meters. In Colorado they wouldn't bother to name it.

For millions of years, this area has been part of the big temperate-zone forest, which covered the eastern third of the continent until the white men moved in and cut down most of the trees for farmland. It's pretty well out towards the western edge of this forest, and the edge moves back and forth with the weather. In a series of dry centuries, the forest retreats eastward, leaving most of Missouri as grassland; then a sequence of wet centuries brings the forest back again.

We had evidently hit one of the drier periods. There was still plenty of timber around us, mostly maple, hickory, and several kinds of oak; but it was broken into clumps and copses. In our business, we prefer this to a solid, dense forest. Not only are the animals thicker, since the grass provides them with food down where they can reach it, but we can also see them better. In a real jungle you're bloody lucky to see fifty meters. You never know how many beasts of the kinds you're looking for are just outside that limited radius of vision.

In any case, there were no animals except a couple of squirrels in sight when the Raja and I hopped out with guns ready. After a trip by the chamber back to Present to fetch our equipment, setting up the camp kept us all busy for the first couple of hours.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

One of our preparations was to spread a big sheet of canvas away from the camp. This sheet was attached by a steel cable to a power winch, and the winch in turn was belayed to the bars of the chamber and plugged in to the chamber's power point. If we could get our mastodon to stand on the sheet, we could tranquilize it and use the winch to haul it into the chamber. I had the boys build a little earthen ramp from the ground of our landing place to the sill of the chamber door. But the canvas could be carried only as far from the chamber as the length of the cable allowed.

I was about to call time for tucker when we heard crashing from a clump of trees south of us.

"Hey!" said Hockersmith. "Maybe that's our mastodon, right to hand! Fred, get out the apples!"

Hockersmith's boys rolled out the barrel, while the Raja and I cautiously approached the grove. As we slunk around the clump of trees, the cause of the disturbance came in sight. It was a big ground sloth, which had hooked its claws under the roots of a young maple and pulled it out of the ground. Now it was sitting up on its hindlegs and tail, holding the uprooted sapling in its forepaws and eating its way down the tree. It had already eaten all the leaves and twigs, branch by branch, most of the distance from top to base.

Imagine an animal like an oversized bear with a big, bushy tail, or better yet a wolverine scaled up to the bulk of a small elephant. The hind feet had heels that stuck out to the rear almost as far as the rest of the foot did forwards, which certainly gave the animal a solid stance.

The ground sloth looked at us in a vague sort of way and went back to its feeding. Hockersmith asked, "What d'you call that critter, Reggie?"

"Ground sloth," I said. "First discovered by your President Jefferson, who got hold of a fossil claw and named the animal *Megalonyx*. He thought it some sort of lion."

"Excuse me, Reggie," said young Delarue. "I'm sure that one belongs to the genus *Mylodon*, not *Megalonyx*."

"OK, call it what you like."

"Are we going to do anything about it?" asked Delarue.

"I see no reason to. Some clients would shoot it just to hear the gun bang and see the animal drop dead. But we shan't have room in the chamber for it and our mastodon, too, assuming we catch one. So I would leave it be."

"It doesn't seem afraid of us," said Hockersmith.

"Has never seen creatures like us," I said. "If the books are right, the only predator it seriously had to fear was the sabertooth. The ground sloth has an armor of little round bones embedded in its skin, and it would take those saber-fangs to reach a vital organ. We don't look or smell like sabertooths. Even the American lion might have found it too tough to handle, since a swipe with those big claws could

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

take your head off."

We watched; but all the ground sloth did was just eat, eat, eat. From what I've seen of large plant eaters, especially those who live on leaves or grass, that is what they mostly do. They have to spend their time eating, because grass and leaves have a bloody low nutritional value.

Soon the *Mylodon* had cleaned that sapling of every last leaf. It dropped the trunk, came down on all fours, and ambled into the grove, looking for another sapling. It walked on the knuckles of its forefeet, somewhat as a gorilla does, and paid us no more heed.

In looking for animals to shoot, photograph, or just gawk at, one must be prepared for the unpredictability of their appearance. During the following days we saw other Pleistocene mammals—deer, bear, ground sloth, horse, a bear-sized beaver, and a glimpse of a lion at long distance—but no mastodon.

Hockersmith explained: "It's the same with elephants. They are always migratory because they have such enormous appetites that a herd soon strips all the greenery from any place they inhabit, even the bark of the trees. So they have to move on, leaving the area they have devastated to recover. That may take years, and this fact complicates trying to preserve them."

More time passed without sight of mastodons. One of Hockersmith's men shot a deer, so the camp had fresh meat for a while. One day Hockersmith and the Raja came in from a hike in considerable excitement.

"There's something of the elephant kind near here!" said Hockersmith. "We passed a fine pile of elephant turds; no mistake!"

We got up a safari to look into the matter. After some hours of tracking, we heard a rumble ahead.

"We're getting close!" said Delarue. "That's the proboscidean borborygmus."

"The *what?*" said Blackelk, turning his coppery face to me. "What does he mean?"

I said: "That's technical for the rumble that gases make in an elephant's guts."

We went ahead cautiously until we could hear the sound of breaking branches. At last we sighted our quarry, about seventy meters off and pulling the branches from a basswood tree to eat the twigs and leaves.

It proved a big mammoth, a good four meters at the shoulder. It was rather short in the body but long-legged, covered with reddish-brown fur, nowhere near so long as that of the smaller true or woolly mammoth farther north. It also bore a fine pair of long, spirally curved tusks, crossing at the tips, which would have driven any of my trophy-hunting sahibs into ecstasies. There was once a lot of argument over what use such crossed tusks could be, since the points could not be applied to anything. Then it was figured out that the bulls used them as snow shovels to get at food in winter, the cows and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

young following behind. Time travel has confirmed the theory.

"Columbian mammoth," I said. "*Paraloxodon jeffersoni*, if I remember the textbooks."

"Oh, that terminology's obsolete," said young Delarue in his irritating way. "Nowadays most specialists lump it in with the woolly mammoth as *Mammuthus*. Some even want to cram them all back in Linnaeus's *Elephas*, but I wouldn't go that far."

We watched the mammoth; but just looking at an animal eat, eat, eat gets pretty bloody boring after a while. Hockersmith asked, "Shall we try to capture it, Reggie?"

I shook my head. "He's too tall to fit into the chamber, unless we could get him to go down on knees and elbows and crawl in. I don't see much prospect of that."

"You could shoot him with a tranquilizer charge," said Delarue. "He'd fit in lying down, I'm sure."

"Yes? And suppose I did give him a tranquilizer shot. He'd just lie down and doze; and then how should we get him to the chamber? We must be a kilometer from the camp, and almost as far from the pallet." That was what we called the canvas sheet attached to the chamber. "Besides, he must weigh at least five or six tons. Anybody want those tusks for trophies?"

"Not I," said Blackelk. "My ancestors did enough of that."

"Then let's return to camp."

"Hey, wait!" said Delarue, fiddling with his camera. "I want a close-up shot."

Off he trotted, right towards that bull mammoth. I had read that lone males of the elephant tribe are likely to be short-tempered; lack of regular sexual outlets, I suppose.

"Hey, come back here!" I called. But Delarue just gave a vague wave and kept on towards the mammoth.

When he had covered half the distance, the mammoth noticed him with its rather dim eyesight, I suppose; or perhaps it caught his smell. It dropped the branch it was eating and started towards Delarue with its trunk up and waving about, sniffing. Delarue, who had no gun, kept his eyes glued to the camera finder.

The mammoth gave a squealing grunt and kept coming. I got ready to shoot. Delarue at last caught on to what was happening and rose to his feet. As he turned to run back to us, with the mammoth looming over him, the silly galah tripped over his own feet and fell sprawling. Now I dared not shoot for fear that the mammoth would fall on Delarue and squash him.

Then, to one side, the Raja's gun went off. The mammoth staggered as if from a tremendous blow. It regained its balance and shuffled away, shaking its head.

"I shot him through that bump on top of his skull," said the Raja. "Knowing you didn't want him killed. The bullet just went through that spongy mass of bony cavities. He may have a headache for a while, but the holes should soon heal up." That dome atop the heads of mammoths provides anchorage

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

for the huge neck muscles, which have to be bloody powerful to support those tusks.

"You should have killed him," said Delarue. "I could have gotten a paper out of a study of its head, or even my thesis."

"You didn't speak up," said the Raja.

"But I should think anyone with brains—" began Delarue.

My own temper was getting frazzled, and I did my lolly: "Look, goddamn it, you almost got us into serious trouble by going close to the mammoth when I told you not to, and then falling over your own stupid feet in the animal's path. The next stunt of that kind you pull, we'll hog-tie you, put you in the chamber, and tell Cohen to drop you off at Present."

"I—I'm sorry," he mumbled.

More days passed without a sign of mastodon, although all the paleontological finds indicated that at this time the place should swarm with them. The Raja and I began to worry, since the charges for keeping the chamber back in the Pleistocene were mounting up. Norman Blackelk worried, too, saying: "I don't know, Reggie, how much more money the directors of the Redintegration Society are willing to sink in this trip. Perhaps we ought to shift camp after all."

"That would run the charges up pretty fast, too," I said. "We should have to go back to Present and round up some extra crew and our train of asses—burros, if you prefer—to help with the move."

Hockersmith said: "Why don't we try to catch one of the smaller mammals: say, a Pleistocene horse or beaver; or even that ground sloth?"

Blackelk looked dubious. "We may come to that; but first I'd have to consult the exec committee of the Society. They were pretty definite that they wanted a young mastodon. They already have a breeding stock of several other Pleistsocene species, and they want to spend their money where it'll do the most good."

"Hey, Norm!" said Hockersmith. "Just had an idea. You're a real Native American, aren't you?"

"So they tell me," said Blackelk. "Less than one-quarter white genes."

"Well, the Indians used to put on ceremonies, with dances, to encourage animals of the kinds they hunted to come around and let themselves be killed. I seem to recall that the Ghost Dance, which got poor old Sitting Bull killed, was supposed to bring back the buffalo. It didn't, of course, since by then the whites had shot most of the buffalo with repeating rifles."

Delarue cleared his throat. "Don't you mean 'bring back the bison'?"

"No; I said 'buffalo' and I meant 'buffalo.' That's what the animal was always called in that time and place. A 'bison' is something an Aussie like Reggie here uses to wash his hands in."

"Oh, bulsh!" I said. "A dinkum

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Aussie does *not* pronounce 'basin' and 'bison' alike. Unless you're hearing-impaired, you can hear the difference: 'basin,' 'bison,' 'basin,' 'bison.' "

"I see," said Delarue. "You move 'basin' halfway to 'bison,' and 'bison' halfway to 'boyson.' "

Blackelk asked: "Is there such a word as 'boyson'?"

Delarue shrugged. "I once knew a Mr. Boysen." He turned to Blackelk. "What did the Crows call it, Norm?"

Blackelk spread his hands. "Don't know. I learned Absaroka in school, although all the tribe are Anglophones now. The theory was that the language mustn't be allowed to die out, because it was a priceless cultural heritage or something. I never became fluent in it. Actually, 'bison' and 'buffalo' are both names for several kinds of Old World wild cattle. The white invaders carelessly applied both Old World names to the one American species, since they couldn't pronounce the Native American words for the animal."

Hockersmith said: "We're getting away from the subject. Norm, we want you to do a ghost dance to bring back the mastodon. It may not work, but what have we got to lose?"

"Don't know that I could do that," said Blackelk. "Even if I could remember enough Absaroka, the language has no word for 'mastodon.' Maybe it did once, but if so it must have been forgotten soon after the animal went extinct."

"Well then, simply call it 'mastodon.' Your Native American gods would understand."

"I'll see what I can think up—"

"Don't do it, Norm!" said Delarue. "It's just pandering to primitive superstition. The world will never be able to manage its affairs in a rational manner as long as people go in for irrational, unscientific cults and sects, with gods and other spooks."

Delarue's cocksureness even got under the skin of Joe Hockersmith, usually an even-tempered, self-controlled man. "Look, squirt," he said. "We'll make it a sporting proposition. If Norman comes up with a ghost dance, what'll you bet the mastodon don't appear in a reasonable time, say ten days? How about ten bucks?"

"Make it fifty," said Delarue. "I don't ordinarily bet, but against a silly superstition it's a sure thing."

They shook hands. Blackelk said: "The first thing I need is a drum. Too bad we didn't bring one."

After much yabber, we decided to convert Hockersmith's barrel of apples into a drum. We dumped the apples out in the chamber, took a sheet of plastic used as a tarpaulin, and with much tugging and grunting got it pulled tight over the empty barrel and dogged down. It gave a satisfactory *boom* when Blackelk slapped it. He said:

"Now I need some dancers. Reggie, you and Joe ought to do."

"Me, dance?" said Hockersmith. "Never have in my life. My wife's been after me for years to take

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lessons—"

"You thought up this project," said Blackelk, "so you can damn well play your part in it."

"What steps have we got to learn?" asked Hockersmith.

"I'll show you." The steps proved simple enough, with much stamping and raising the knees, as in that British parade step the Commonwealth armies used to practice.

After tucker that night, when full dark came, we cleared a space and went to work. Blackelk sat on a camp chair with the barrel between his knees. Stripped to the waist, he had a necktie knotted around his forehead for a headband and some feathers, which Ming supplied from a fresh turkey in our commissariat, stuck in the band. He began a chant in Absaroka. I can't reproduce any of it. It had a rather monotonous little tune with about three notes, while Blackelk slapped his drum. Hockersmith and I hopped and stamped around him in circles, as Blackelk had taught us. The rest of the crew, standing about in the firelight, kept time by clapping. After a while the rhythm and the pounding got into our blood, as they got into mine when I once took part in a corroboree with some Native Australians in the outback.

When Blackelk ran out of song, and Hockersmith and I out of wind, we paused. From the dark woods came a squeal, and then another. Then several proboscidean throats let loose with that sound called "trumpeting," because it does sound like some sort of trumpet, only a horn with spit in it.

Everybody turned to look while the Raja and I got our guns. Presently an animal hove into view, near enough so that we could dimly make it out by firelight. It stared at us and turned away; the light showed it to be an American mastodon. I guessed it to be a female from its slender tusks. I had read that elephant herds are commonly bossed by the oldest cow; they have alpha females instead of alpha males.

After this first mastodon came another, then a couple of little ones no more than waist high; then another big one, following the track of the first. More went by until at least a dozen had passed. All, as nearly as I could judge, were cows and young. At the tail of the procession, a big bull ambled along. This one looked our way, hoisted his trunk to sniff, and flapped his ears. Then we heard a loud toot, which seemed to come from the head of the line. The bull turned away and single-footed it after the herd like a Bondi tram. It must, I thought, have been the big cow who headed the line, the matriarch, telling the bull: "Hurry up, you stupid male! Close up!"

With his hand out, Hockersmith walked up to Delarue. "Fifty bucks, please!"

"Damned coincidence!" grumbled Delarue. But he paid.

Did I think our ghost dance had anything to do with the herd's appearance? Not really, but I try to keep an

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

open mind in such matters. There is so much that human beings don't yet understand.

It did not seem practical to go after the herd that night. We got up extra early next morning and set out with our helpers and equipment. Hockersmith carried not only his gun but also a big bag of apples hanging round his neck. He explained: "In my experience, you can train almost any animal of the smarter kinds, such as elephant or bear, to come for a free handout. The trouble starts when you run out of goodies. Then the animal may decide to take you apart to see where you've got the rest of the stuff hidden."

Trailing the herd presented no problem. I am not the trailman that some black trackers are down-under. Some claim these Native Australians can track an animal across bare rock. I don't believe that; but what they can do is remarkable enough. However, between the big round footprints wherever the soil was a little soft, and the droppings, following that herd needed no Native Australians. We could tell when we came near the herd by the sound of breaking branches.

We scouted round to get downwind and stole up on them. Everybody was told to keep quiet. Hockersmith warned that if startled the animals might charge, forcing us to slaughter them, or all run off along their migration route and not be seen again in this area for a year.

"All right, Joe," I said. "Your turn."

"Which one do you want?" asked Hockersmith.

"That young bull," said I, pointing to an animal not quite old enough to have gone off on its own yet. It stood about two meters at the shoulder, with thick male-mastodon tusks only about half as long as those of the herd bull, and a coat of golden-brown fur like that on the mammoth that Delarue had bothered.

I asked: "Where is the big bull now?"

"Don't see him," murmured Hockersmith. "Ah, here he comes. Seems to have something on his mind."

Out from behind some trees came a young female mastodon and, right behind her, the big bull. This last obviously had something on his mind, for his huge penis, the size of a big man's arm with the fist clenched, was fully extended. It seemed, though, that his lady love did not want any just now. After her came the bull with squeaking sounds, which I suppose were mastodontic endearments. She single-footed away fast, weaving among the trees and other members of the herd with the bull behind her. Soon the two passed out of sight, so we never did learn whether the bull consummated his passion.

It took self-control not to burst out laughing. In fact, young Delarue did emit a sputter until the Raja shushed him.

"OK, here goes!" said Hockersmith.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He stole in Red Indian style towards the young bull I had pointed out. When there was nothing between him and the juvenile male but a big bush, he took an apple from his bag and tossed it. It bounced off the flank of the mastodon, which was munching a shrub it had uprooted. The mastodon jerked up its head and turned this way and that to see what had disturbed it.

Hockersmith tossed another apple, so that it landed on the ground a couple of meters from the mastodon's head, in the direction of the pallet.

The mastodon stood weaving this way and that, and sniffing in all directions. It located the second apple, walked to it, and ate it. This brought it in sight of Joe Hockersmith. It gave him a suspicious stare but otherwise followed the trail of apples that Hockersmith was laying down by tossing them ahead of the beast.

An hour of this brought us to the canvas pallet. When, by the use of more apples, Hockersmith had maneuvered all four of the mastodon's feet on the canvas, he slipped a tranquilizer charge into his rifle and fired. Tranquilizers nowadays work much faster than those of the last century, when this method of immobilizing animals began. The mastodon squealed, gave a prodigious yawn, and sank down on the canvas. I called the camp on my communicator and told Beauregard to start the winch.

* * *

The rest of that capture was routine. With the help of the winch we got the mastodon, still tranquilized, into the chamber. The transition back to Present went off without a hitch, save that the beast crapped on the floor. This led Cohen to put on one of his expositions of high-class cursing.

Thank Aljira that Prochaska's transition chamber was on the ground floor of its building! Otherwise I don't know how we should ever have got a couple of tons of mastodon down a flight of stairs and round corners. With all members of the safari pulling and heaving on the canvas, we got the tranquilized beast to the exit. By detaching the winch from inside the chamber and rigging it with extension cords in our timber pen, we gave the winch a clear shot at hauling the mastodon into the inclosure.

During a break in this chore, Norman Blackelk telephoned Redintegration headquarters and told them to send a lorry to pick up their specimen. He also told them to bring a few hundred kilos of lettuce and cabbages to feed the creature on its way to California.

The lorry took a week to reach us. Meanwhile we got better acquainted with the animal, for which someone suggested the name "Lancelot." Once a day we opened his cage door to shove in a hundred-kilo bundle of hay and a few cabbages. Lancelot gobbled the cabbages but did not much like hay. He let the bundle sit for hours before starting to eat it. Delarue ex-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

plained that, while the mastodon would eat anything vegetable, it was really more of a browser than a grazer. What he would really have liked was an equal weight of cuttings from the branch ends of trees and bushes; but we lacked the time to arrange for that.

When the cage door was opened, Lancelot backed away, snorting and grumbling. If I could sum up his attitude towards us, I should call it "surly," although I know better than to attribute human emotions and attitudes to an animal of another species. The only one for whom Lancelot seemed to have slightly warmer feelings was Joe Hockersmith. Every day he came to the cage with a couple of apples, which Lancelot learned to take from Hockersmith's outstretched hand. When Hockersmith went away, you could see regret in the mastodon's stance, with drooping head, trunk, and eyelids.

At last the lorry arrived. It was not a semi-trailer rig but a one-piece ten-wheeler. Still, its body was just about the dimensions of the transition chamber, so there should be no problem with fitting Lancelot into it.

My crew wrestled the timber ramp into place outside the door of the cage, and the driver backed the lorry up against its high end. At its rear, the lorry had a pair of swinging doors. When closed, they were secured by a pair of big vertical bolts, running from top to bottom. When the lorry was buttoned up, these bolts were held down by a couple of hinged latches, which in turn were secured by padlocks.

Lancelot plainly did not like the looks of the lorry. He backed into the farthest corner of his pen and, whenever one of us tried to coax him to climb the ramp into the lorry, he trumpeted and swiped at us with his trunk and tusks.

"Think we'll have to tranquilize him again?" asked Blackelk.

"I hope not," I said. "He's had so much of that already that it might impair his health."

"Let me try," said Hockersmith. He came back soon with the bag of apples round his neck.

In the cage, Hockersmith approached Lancelot with an apple, talking in friendly, man-to-mastodon tones. Lancelot took the apple, ate it, and began sniffing round until he located the bag. Hockersmith pulled the bag open and let Lancelot extract an apple. Then he moved slowly towards the open gate. Lancelot took another apple, and another, and another. Soon Hockersmith had him up the ramp and inside the lorry.

I heard a shout: "Hey, you dumb brute, let go! I'll give you the goddamn bag!"

Peering round the door frame, I saw that Lancelot, having figured out where the apples were coming from, had wrapped his trunk around the bag and was trying to pull it away from Hockersmith. The latter ducked and slid out of the loop just in time to keep Lancelot from breaking his neck. Hocker-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

smith came out, saying:

"OK, Mr. Barnes, close her up!"

The Sun was setting; getting the equipment in place and Lancelot into the lorry had taken us all day, and we were bloody tired. So it was decided not to send Barnes off with the lorry that night but to let him get a good night's sleep.

"Lancelot won't really mind being in the dark," said Hockersmith. "In the elephant tribe, the sense of sight is weak, while those of smell and hearing are very keen. He will sniff out the rest of those apples."

Barnes pulled down the door-holding bolts into their bolt holes. But he did not bother to fasten the padlocks.

Next morning, my wife drove me to the university grounds early. Instead of the Redintegration Society's lorry, backed up to the timber pen outside the transition-chamber building, there was no lorry but a lot of people talking excitedly and a couple of coppers. One of these troopers was taking down statements from Norman Blackelk on a pad. I hurried up, saying: "What's happened? Has Barnes left already?"

"Hell, no!" said Hockersmith. "Lancelot's been hijacked!"

"Eh? What happened?"

"When people came to work this morning, they found poor old Fitz bound and gagged, with a story of having been held up after midnight by masked men with an assault rifle." Fitz Herbert was the university's night watchman. "They tied him up, hot-wired the truck, and drove away."

That is how, a couple of hours later, I found myself riding a police helicopter over the southern suburbs. We quartered back and forth over a huge area, looking for our lorry, with another vehicle nearby. Alarms had been sent out for our lorry, of course, and there was little chance of its even getting to the state line. With its description and known license number, it would easily be picked up; the mastodonknappers had not had time to disguise it.

Since the drongos would probably have figured this out, it seemed likely that they would have brought another lorry into which to transfer Lancelot. I thought they might not have an easy time with this. Lancelot had got used to the Raja's and my people to the point of tolerating us; but any lot of strangers who confronted him might suffer difficulties.

At last I pointed down and told the pilot policeman: "That looks like it." I tried to read the license number with my binoculars, but the aircraft's vibration made this impossible.

A lorry just like the Redintegrationist's stood in a clear space in a bushy area that the cockies had abandoned but that developers had not yet cut up and built over. That was not all; a big semi-trailer rig was backing towards the rear of the smaller lorry. I could understand why the hijackers would bring a larger vehicle, since they would not know how big a Pleistocene animal

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

we should fetch back to Present.

The cop spoke on his radio to headquarters. He had to study a map to give the exact location. Then he circled and went to a small airfield, used by private-aeroplane owners. He got permission to land, and down we went.

More cops drove up, and one of their cars took me. The cop who was driving said: "Mr. Rivers, I don't think we can go busting in shooting like it was a show. They got one of them assault rifles, and all we got is pistols. Have to wait for more artillery."

"Too bad I haven't got my dinosaur gun," I said. "Didn't have a chance to pick it up."

"OK, but it don't spray bullets like an assault rifle does. So keep your head well down when we get near these perps."

Eventually we found a little rise from which, with glasses, we could sweep the area where the lorries were parked. There seemed to be three in that push: one carrying the gun, while two others worked to erect a movable platform between the two lorries. This was one of those steel contraptions on wheels, where the platform is raised on scissor legs by a hydraulic jack. One man was turning a crank to pump up the platform, now about halfway up to the lorries' doorsills. The other of that pair I recognized as Horace Dunbar, the game-ranch owner.

"Don't you blokes keep rifles handy for such occasions?" I asked my cop.

"Yeah," he said, "but you gotta go through red tape to take 'em out. Takes time." He spoke in low tones into his handset, then back to me: "Keep your shirt on, Mr. Rivers. They're sending some of the boys with more fire power."

We left the car to creep up a little closer to the lorries. When I looked through the glasses again, I saw that the platform wallah now had the thing all the way up to the lorry sills.

The man who had worked the hydraulic jack climbed up on the platform. He undogged the bolts that secured the doors of the smaller lorry. I saw that Barnes had made a mistake in not closing the padlocks. Even if he had, that would only have delayed things a bit, provided the hijackers had brought a bolt cutter or some such implement with them.

The fellow hoisted the two long bolts out of their sockets and dogged them in the raised position. Then he climbed down to the ground again and went to the tractor unit of the eighteen-wheel semi. He climbed up into the cab, and soon the door at the arse end of the trailer began to rise. It had one of those roll-up doors in sections, which rises like a window shade and stows itself against the roof of the trailer. Soon the end of the trailer yawned wide open.

Then this bloke climbed down, came aft again, and climbed back on the platform. Meanwhile Dunbar stood watching and giving orders, while the cove with the rifle stood

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

with his back to the lorry, looking in all directions.

The man on the platform took hold of the door handles and pulled the doors open. Dunbar handed him a dowel rod about a meter and a half long, with a steel hook in the end. I recalled seeing a circus man control an elephant by catching his ear with such a hook. I had a feeling that Lancelot would not take kindly to such treatment.

Then Dunbar climbed into the cab of the smaller lorry. I could not see what the ratbag did; I suppose he opened the window in the back of the cab, and that in front of the lorry body, and poked something through. At any rate, Lancelot gave a shrill toot and emerged on the platform between the vehicles. The man with the goad leaped off the platform when Lancelot took a swipe at him.

It's a comfort to know that we were not the only ones to make mistakes. I suppose the man who jacked up the platform neglected to turn the handle that locked the platform in the raised position. As soon as Lancelot put his full weight on the device it started to sink slowly back to ground level, while the crank handle spun in reverse.

Even at that distance, we could hear the shouts of the three men. As the platform neared the bottom of its travel, Lancelot stepped down to the ground. He trumpeted, lashed the air with his trunk, and started off.

Dunbar, who had come down from the lorry cab, yelled and put himself in front of that mastodon, waving his arms, like those people who stand in front of tanks when a government tries to put down an insurrection. Lancelot gave a swipe of his trunk, brushing Dunbar to one side but not quite knocking him down.

Dunbar yelled, stepped back to the mastodon, and grabbed the animal round the foreleg. I suppose he had counted on Lancelot to keep him out of bankruptcy, by the money he would get by letting his rich client shoot the beast; and he couldn't bear to see his last financial hope shuffle away. Desperate, he did one of the most foolish things you can do, which is to try to match muscle with a big wild animal. Even a fifty-kilo chimp is much stronger than any mere human being. But desperate men often go a bit nuts.

Lancelot just gave a kind of sidewise kick, which sent Dunbar flying into a bush. Then cops with rifles sprouted from the shrubbery, yelling to the remaining two. The one with the assault rifle dropped it and raised his hands. With the leader of the push down and out of action, there was no reason for the subordinates to make it a fight to the death.

Joe Hockersmith appeared with another bag of apples. The mastodon gave a happy squeal and grabbed it.

There's little more to tell. Horace Dunbar died on his way to the hospital in the ambulance. He was in his sixties, and that kick had broken some things inside him. Blackelk

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and his society got their mastodon, and Lancelot is growing into a fine big tusker. But the only one who can safely approach him on foot is Joe Hockersmith, provided he brings some apples with him.

You asked what had caused us the most trouble in Present. I think this case, the only one where we brought an extinct form forward to Present and had it hijacked, qualifies, eh, Mr. Schindler? ■

IN TIMES TO COME

Our lead novelette for June commemorates (a couple of months late, due to circumstances beyond anybody's control) an important anniversary. The March 1953 *Astounding* carried a story called "Thou Good and Faithful," under the byline "John Loxmith." That was really the American debut of John Brunner, who now needs no introduction. Next month, almost exactly forty years later, John returns under his own name with "The Numbers Racket," described as "a posthumous collaboration with Er*c Fr*nk R*ss*ll." It's a clever and enjoyable piece with much of the flavor that that description and the anniversary suggest, fittingly illustrated by Kelly Freas. Congratulations, John Brunner!

Dr. Arlan Andrews, Sr., provides the fact article, "Single Stage to Infinity!" The single-stage-to-orbit spacecraft, or SSTO, is one of the leading contenders as a way to get people economically and efficiently into space, and Arlan offers a unique insider's view of its prospects. And, of course, we'll have a wide spectrum of additional stories by writers including Mark O. Halverson, Gregory Bennett, Bud Sparhawk, Michael F. Flynn, and David J. Strumfels.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Dr. J. Kevin Steele

IS AIDS AN AUTOIMMUNE DISEASE?

INTRODUCTION

1991 marks the tenth year since the social, political, cultural, and medical phenomenon now known collectively as AIDS was first formally identified as a new disease. A decade ago, the first carefully documented reports of a new syndrome, which exposed its victims to a bewildering variety of bacterial and viral infections, appeared in the *New England Journal of Medicine,* and the reports of the CDC (Center for Disease Control) in Atlanta. Prior to these first reports, which recognized the existence of AIDS, it now appears there were scattered cases of AIDS stretching all the way back to 1958(!), but these had been treated as isolated unusual cases without a common underlying cause suspected.

Since that time, the disease has expanded into a global pandemic (number of U.S. deaths to date: 110,000 and counting); at the same time, medical science has scrutinized the virus responsible for AIDS, HIV (Human Immunodeficiency Virus), to an unprecedented degree, without developing a vaccine, therapy, or even a clear idea of the mechanism by which the virus ultimately kills. Ironically, HIV appeared on the scene at a time when DNA technology, advanced culture techniques, and computer modeling made it possible to subject it to unprecedented scrutiny. The shape of the virus, the exact sequence of every coat protein in its structure, the receptor by which it binds target host cells, the precise details by which the virus regulates its reproduction, all these things are known in painful detail. What, unfortunately, is not known is the most critical bit of information: how to cure the disease. The fact that AIDS might be complex beyond what anyone could possibly have imagined in 1981 is only now dawning on the scientific world.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

What follows in this article is a description of an even more daunting thought: that AIDS is not due to a result of any direct action of the virus, but of the body's own immune system, turning on itself in a frenzied attempt to eliminate an essentially harmless passenger. When this occurs, and there are numerous precedents, it is known as autoimmune disease. If this is the real cause of AIDS, then we are essentially back, after 10 full years of research, to square one in terms of finding a cure.

I. AIDS and the Immune System—The "Standard" View

A readily understood model which represents how the HIV virus is supposed to bring about the destruction of the host's immune system is shown in Figures 1 and 2. In order to understand how the virus might interfere with the normal immune response, a standardized representation of an immune response to an invading cell, in this case, a bacteria, is shown in Figure 1 (For a more detailed explanation, see "Zero Gravity and the Im-

Figure 1: Standardized Immune System–Normal

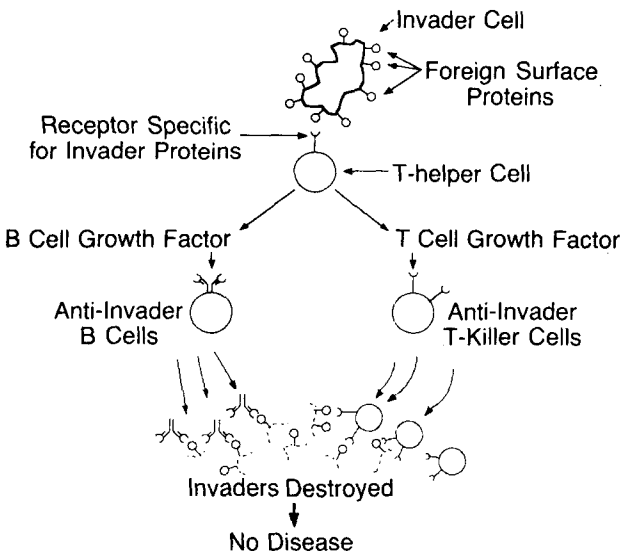


Figure 1: A standardized view of the immune system. The central cell that drives forward the immune response is the T-helper cell. When this cell encounters foreign proteins on an invading bacteria, it releases growth factors (BCGF and TCGF) which cause B cells to make anti-bacteria antibody, and killer T cells to directly attack and destroy invading cells. The result, for a healthy individual, is the destruction of the invader cells.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

mune System," *Analog*, April, 1989). Three major groups of immune cells participate in the attack on the bacteria; these are known as T-helper cells ("T" because they are born and raised in the thymus), T-killer cells, and B cells ("B" because they are born and raised in the bone marrow).

In the normal immune response, T-helper cells are activated by the foreign proteins displayed by the bacterial invader and, once activated, release two chemicals which help the other two cell types to perform their tasks. These are called B-cell growth factor (BCGF) and T-killer cell growth factor (TCGF), the latter stimulating T-killer cells to directly attack and blow up invader cells by punching holes in their membranes. The invading bacteria are then destroyed, and the body remains free of disease.

That this process goes horribly wrong in patients with AIDS is clear; Figure 2 gives the conventional view

Figure 2: AIDS Syndrome—The Standard View

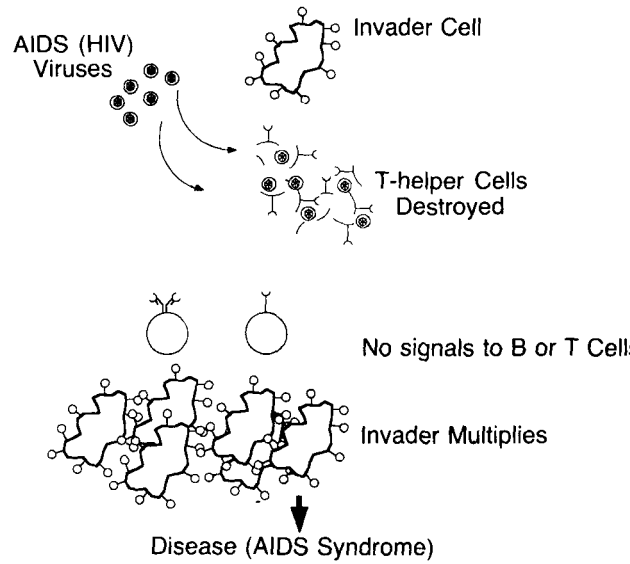


Figure 2: AIDS—the direct killing model. According to the conventional view, HIV virus incapacitates the immune system by directly killing T-helper cells. The pathway that leads to a productive attack on the invader cells is thus dislocated at its most critical juncture; without signals from the T-helper cells, B and T cells do not attack the bacteria, and a large number of nasty diseases results. This spectrum of unusual diseases, or syndrome, is then termed AIDS (Acquired Immune Deficiency Syndrome).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of how this is supposed to occur. This has been termed the "direct killing model"; according to this model, HIV virus specifically invades and kills T-helper cells and, as the number of helper cells decline, they can no longer act as intermediaries between invading cells and the B and T-killer cells. These cells then lie quiescent, lacking the growth factors they need to respond, as the microbe invaders multiply throughout the system. The patient is thus susceptible to all manner of infections which normally would be easily dealt with. These are called "opportunistic" infections; the microbe or virus, which normally would not be a problem, is taking advantage of the opportunity of a paralyzed immune system to attack.

This would seem to be a simple and straightforward explanation for the pathology of AIDS. According to this model, any approach designed to block (as in a vaccine) or remove the virus with chemicals (such as AZT) would resolve the syndrome. However, it is now clear that there are major problems with this model; these can be summarized below.

II. Problems With the Direct Killing Model

The virus known as Human Immunodeficiency Virus (HIV) was isolated from an AIDS patient in 1983; very shortly afterward, it was sufficiently characterized to identify it as belonging to a closely related group of viruses known as retroviruses. The retrovirus family include HIV-2 (Human T cell leukemia virus), MMTV (mouse mammary tumor virus), ATLV (avian T cell leukemia virus), STLV-III (the simian equivalent of HTLV) and a veritable alphabet soup of others. All these viruses have one striking characteristic in common: they are responsible for causing uncontrolled cell growth and cancer in a wide variety of species. Indeed, this is why they have all been implicated as cancer-causing viruses for many years (for a complete description of how retroviruses cause cancer, see *Analog*, Sept. 1990). Typically, a retrovirus will insert its genes into one of the host cell chromosomes, and these will be reproduced and passed on to the cell's progeny as the cell divides. By doing this, and in particular, by not killing the host organism, the virus succeeds in spreading more extensively, and perpetuating its species more thoroughly, which is the prime goal of all living things. Occasionally, the process goes wrong, and the virus genes insert themselves in a critical patch of cellular genes, wrecking the cell's growth control systems, thus inducing a cancer.

HIV, however, despite being a quite typical retrovirus, is, according to the direct killing model, supposed to behave completely differently from the rest of the retrovirus family, directly killing T-helper cells at a very high rate. In the petri dish, to be sure, HIV can kill some T cells, generally by a process known as fusion, wherein T cells are stuck together in clumps through infection by the virus, and fuse their membranes together, causing death. However, this phenomenon has never been found to occur in AIDS patients, and, indeed, HIV virus

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

isolated from many individuals cannot kill T cells in culture by any means. Often, a given strain of HIV will kill one indicator T helper line but not any of the others. The cell death that can be attributed to HIV in culture occurs rapidly, over a period of days, not with the extended latent periods of 5-10 years typical of the disease progression in AIDS patients. Most T cells in culture, when exposed to HIV continue to divide undisturbed; as well, like any typical retrovirus, HIV genes can be found inserted in the host cell's DNA, quiescent. These observations, and others, including the observation that there is no difference in virus activity between asymptomatic HIV carriers and full blown AIDS patients, directly challenge the idea that HIV-related pathology, in particular the ability to directly kill T cells, is any different from the rest of the retrovirus family.

Mathematically, it is also hard to believe that HIV is capable of directly killing the sheer number of T helper cells required to bring about immune depletion. In patients, the virus can only be found in a tiny proportion of T helper cells; somewhere between 1 in 10,000, and 1 in 100,000 T cells in the circulation are found to contain virus particles. Even if the virus was capable of directly killing these cells in 24 hours or less, which the culture studies clearly show it cannot, HIV could never hope to kill cells at anywhere near the rate at which the body manufactures and puts new T-helper cells into circulation. In addition, the level of free HIV virus particles in the blood is vanishingly small, approximately 10 to 100 virus particles per milliliter of blood; by way of contrast, a patient with hepatitis will often have 10,000,000,000,000 hepatitis virus particles per ml! This makes it difficult, to say the least, to imagine how the level of HIV virus could achieve anywhere near the quantity required in order to hunt down and destroy the thousands of T cells it must kill, day after day, to cause immune depletion.

Finally, it must be acknowledged that the body is not just allowing the HIV virus to roam at will. Virtually all AIDS patients make a strong anti-virus antibody response. Indeed, it is the presence of these anti-HIV antibodies which is used as the *basis* of the AIDS test! In virtually every AIDS patient, these antibodies neutralize the virus (render it incapable of infecting T cells). In culture, even the paltry T cell killing effects ascribed to HIV are eliminated by adding in to the petri dish antibodies from a AIDS patient. This pattern of antibody production is typical for the whole retrovirus family of which HIV is a part.

While the presence of these protective antibodies explains why the level of HIV is so low in the blood of patients, and also why the virus is so difficult to transmit, it is not so readily apparent why AIDS patients go ahead and die in the face of this vigorous immune response. However, a clue came in the observation that the risk for dying of AIDS is actually, paradoxically, far higher for patients with a high level of anti-HIV antibody than in those making a weaker immune re-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sponse. Clearly, something very strange is occurring in these patients: a form of autoimmunity.

III. Autoimmunity and AIDS

Autoimmunity is defined as the body's own immune system attacking its own tissues. That this is a catastrophe for the body is fairly clear; and indeed, there are many safeguards built into the immune system to prevent this from occurring. First, as T cells mature in the thymus, and before they are released into the circulation to hunt down invaders, they are taught the difference between self and non-self, in a rather harsh way. The young T cells are essentially "shown" self cell surface proteins; those that react to them and respond, are promptly killed. The graduates from this rather rough curriculum are then released into circulation. There, patrolling for any T cells which might have escaped this process (and no system is ever foolproof) are other specialized cells called suppressor cells (see *Analog*, Sept. 1990 for a complete description of these cells) which serve to block any anti-self immune activity which they detect.

This system, while for most of us is very efficient, does occasionally break down. The most famous autoimmune disease is lupus, which has a poorly understood genetic origin (it runs in families, predominantly striking women); possibly their suppressor cells are genetically defective. However, otherwise normal people can also suffer self-tolerance breakdown due to non-genetic causes: when this occurs, it is almost always due to infection with a virus. For example, infection with a virus known as Visna Virus leads to virally-induced autoimmune destruction of the nerves of the body; the appearance of anti-virus antibody, usually after a long latent period, is actually a bad sign, a harbinger of paralysis. Similarly, equine infectious anemia virus, which has a long latent period similar to HIV, induces the body to manufacture autoimmune anti-red cell antibodies. A virus of the same family as HIV, the retrovirus Reo-1, induces a form of diabetes called diabetes mellitus, wherein the body ends up destroying pancreatic cells in attempting to get at the virus. All of these viruses, and the list is quite long, live in specific host cells, and cause their ultimate autoimmune destruction. From these facts, it is not hard to imagine the HIV virus, living in T-helper cells, and inducing their destruction by autoimmune attacks. All the known characteristics of AIDS, including the long latent period between infection and symptoms, the poor direct toxicity of the virus on its host cell, and the correlation between high anti-virus antibody levels and AIDS progression, support this conclusion.

To understand how this attack occurs, it is first necessary to take a much closer look at the interaction between virus and T-helper cell. As shown in Figure 3, the AIDS virus is a simple collection of proteins which interlock to create a tight coat; inside this protein capsule the genetic information of the virus is protected. Protruding like antennae from the virus

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

capsule are molecules of a protein called gp120. This protein makes a perfect fit with a corresponding structure on the CD4 molecule protruding from the surface of T-helper cells. In Figure 3, their affinity for each other is represented, for our model, as a ball and socket; a key in the lock is just as apt an analogy. Once contact is made, the virus is locked to the surface of the T-helper cells and subsequently drawn inside. Infection then occurs, which in the case of the retrovirus family usually means that the viral genes insert themselves into the host DNA and promptly go dormant, usually for the lifetime of the host.

How this interaction can ultimately lead to the destruction of T-helper cells is shown in Figure 4; it can happen in at least two separate major ways. In the first case, gp120 molecules are recognized as foreign proteins and an anti-gp120 antibody is made and released into circulation. The binding site of these antibodies are also formed as balls in order to bind tightly to the gp120 socket, making the same tight fit as CD4 would; these antibodies then would block gp120 from recognizing and binding to CD4 since the "socket" is now occupied. Such antibodies are known as "neutralizing antibody" and are normally good things in most viral infections. However, for a virus which binds to and lives in immune cells, they are trouble. The presence of the anti gp120 antibody in such numbers induces a secondary antibody response directed at the first antibody! The presence of so many antibodies with a "ball" configuration

Figure 3: HIV and the T-Helper cell: A closer look

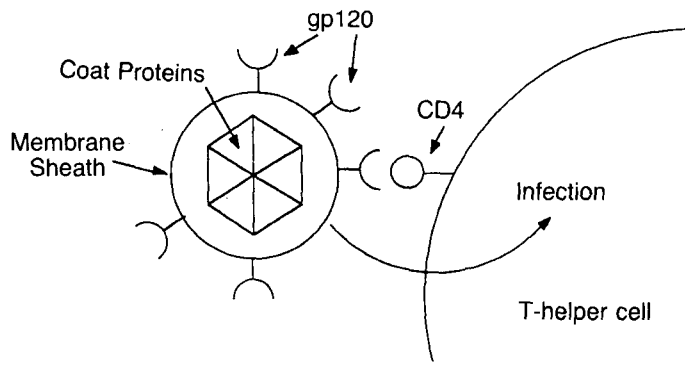


Figure 3: Virus and T-helper cell interaction. The virus attaches to the target cell by binding to a cell surface protein found only on the surface of T-helper cells called CD4. To achieve this binding, the virus displays a complementary structure that fits the shape of CD4 like a ball and socket; this is called gp120. Once a tight fit is made, the virus is then drawn into the T-helper cell, and infection is complete.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Figure 4: Autoimmunity and HIV

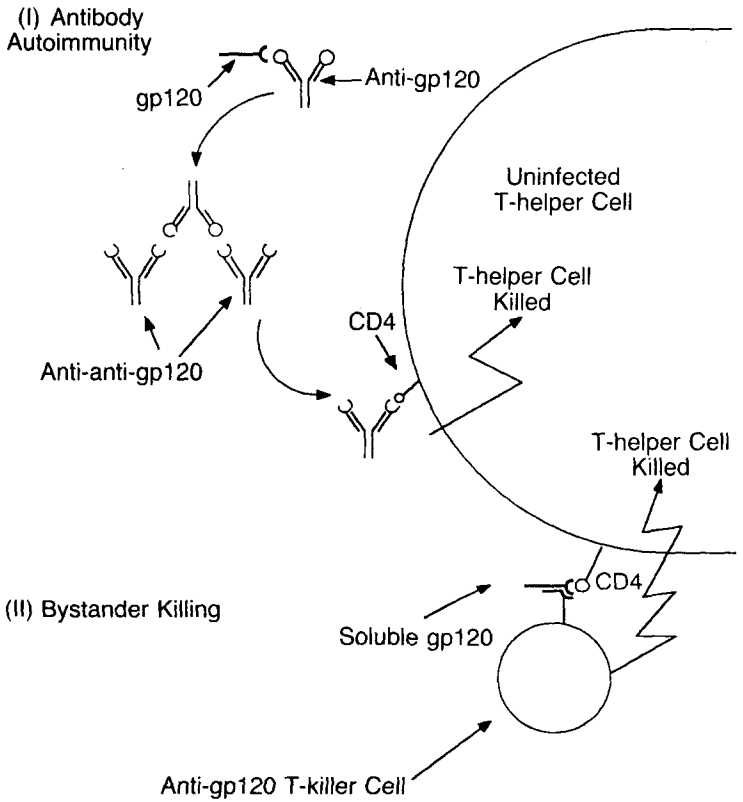


Figure 4: Autoimmunity and HIV virus. Two separate autoimmune pathways can lead to destruction of the T-helper cells. In the first (I), antibodies to the socket region of gp120, which look similar to CD4 in their binding site, are made in response to infection. These are called neutralizing antibodies because they can compete out the binding of gp120 to CD4. However, over many years of infection, these antibodies can be seen as foreign, and stimulate the production of antibodies which neutralize *them*. These antibodies, as can be seen above, can directly kill uninfected T-helper cells by binding to CD4. In the second case (II), loose gp120 from blown up infected cells can still bind to uninfected T helper cells via CD4. These cells now appear to be infected with virus, even though they are not, and are killed by anti-virus T killer cells. In both cases, the more T-helper cells drive forward the B and T cells to kill virus, the more they themselves are ultimately destroyed.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

where there were formally none to be found, creates the illusion to the immune system that these are now foreign proteins; an antibody designed to neutralize these is then quickly made. Thus, "anti-anti gp120" antibodies appear, in the "socket" mode; these not only stop the anti-gp120 antibodies from binding to gp120 but have an added effect: they directly kill normal T-helper cells (see Figure 4)! Thus, uninfected T cells, which are expressing normal CD4 markers, are killed in ever increasing numbers as the antibody response continues to heat up. Eventually, one can predict from this model, a full system crash occurs as the more T-helper cells help B cells to make antibody, the more they themselves are killed.

T-helper cells can also fall victim to a second type of immune response which leads to indirect killing mediated by T-killer cells. As T-killer cells kill virus infected cells, bits of unassembled virus proteins from exploded cells spill out into the circulation. These bits consist of many gp120 proteins which are now loose, soluble, unattached from the virus, and harmless. However, they are still capable of binding to CD4 molecules and T-killer cells which are specific for gp120 molecules and are still out there, searching for fresh victims. Frequently, they find one—a T-helper cell, uninfected, normal, to which a gp120 molecule has attached itself via CD4. The killer cells then bind and destroy this T-helper cell; this activity is known to immunologists as "bystander killing" (the Pentagon would call it collateral damage). Again, the more T-helper cells drive forward the anti gp120 response, the more they contribute to their own destruction, until, finally, the system collapses.

The obvious solution to eliminate both these autoimmune mechanisms would be to shut down the anti-gp120 response. This would remove both antibody and T-killer cell mediated attacks on T-helper cells. Current research centers on the suppressor cells, whose job is to block autoimmune reactions of this type. Whether those people particularly susceptible to AIDS have defective suppression, or if suppressor cells are simply overwhelmed after years of dealing with a persistent HIV infection is not currently known. The best approach would be to raise specific suppressor cells in culture which are capable of blocking anti-gp120 responses, and then injecting them back into AIDS patients. These suppressor cells would then effectively block both the antibody and T-killer autoimmune pathways shown in Figure 4. This therapy should not, however, affect the ability of the body to neutralize HIV virus; after all, antibodies to many different HIV proteins are capable of inactivating the virus, but only responses involving gp120 will loop back to cause autoimmune T-helper cell destruction.

CONCLUSIONS

Currently, the major drive of research into AIDS vaccines and therapies have concentrated on boosting immunity to a single HIV protein,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

namely gp120. Since the virus lives within the most important, central, cells of the immune system, boosting immunity carries a serious risk of inducing the immune system to destroy itself in an attempt to get at the virus. The model in Figure 4, especially, shows exactly how this could come about. It is hard to comprehend the fixation on gp120 exhibited by researchers to date, especially since many other viral coat proteins could be bound by specific antibody, some of which certainly could neutralize the virus effectively. Instead, as information regarding HIV virus has expanded, the focus on gp120 has, if anything, narrowed; now, vaccine hopes center on the actual "socket structure" (called the V3 loop) of gp120 which binds to CD4.

It is clear, however, that if AIDS is one of the group of autoimmune diseases, then our entire perspective regarding treatment and vaccination must be reexamined. The new goal for an AIDS therapy must now be to inhibit the immune response to the gp120 molecule, not stimulate it, essentially negating all previous attempts at treatment. Numerous labs are now turning their attention in this direction, creating a tug-of-war between themselves and the vaccinationists for funding and resources. While this war goes on, there can only be one loser: the victims of AIDS. ■

REFERENCES

1. *Killing of CD4+ cells by soluble gp120*

Ellis Reinberg, et al, 1988. "Analysis of host-virus-interactions in AIDS with anti gp120 T-cell clones: Effect of HIV sequence variation and a mechanism of CD4 + cell depletion." *Cell* 54:561-575

2. *Loop Structure of gp120*

Dazel Capon, et al. "Delineation of a Region of the HIV type I gp120 critical for Interaction of the CD4." *Cell* 50:975-985 1987.

3. *Review of non-direct pathology of HIV*

P. Duesberg. "Human immunodeficiency virus and AIDS: Correlation but not causation." 1989 *Proc Natl Acad Sci* 86:755-764.

4. *AIDS as a Self-Directed Autoimmune Disease*

Daniel Stites, et al. "Hypothesis: AIDS is an Autoimmune Disease Directed at the Immune System and Triggered by a Lymphotropic Retrovirus." 1986 *Cancer Immunol. Immunother.* 41-305-313.

ABOUT THE AUTHOR

Dr. Steele is a Ph.D. in immunology. He holds a dual appointment as a member of Scripps Clinic and as a principal investigator for the Department of the Navy in San Diego, California. His main research effort is currently directed toward new cancer and AIDS therapies based on T-cell regulation of the immune response. This is his third article for *Analog*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

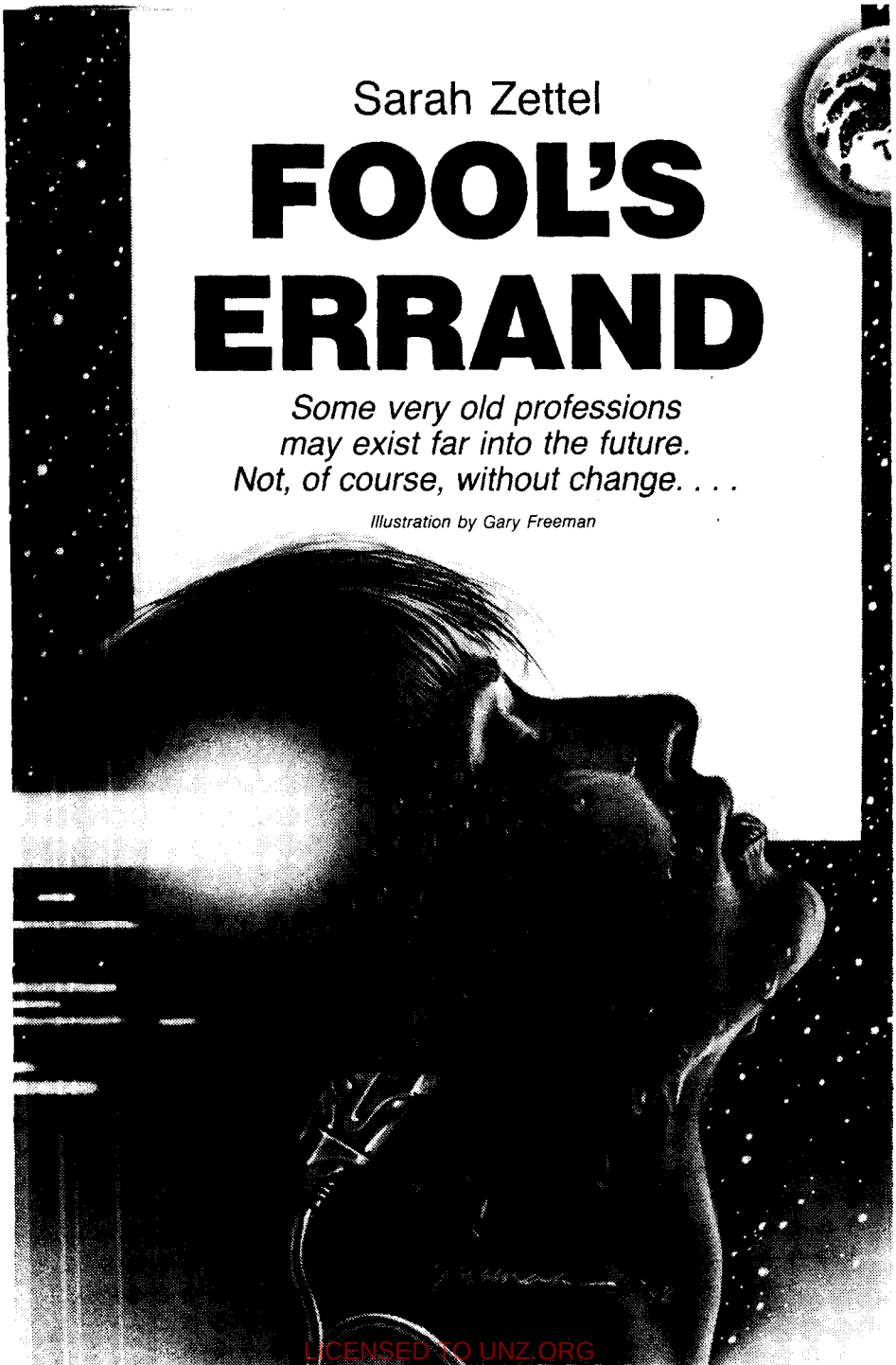
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Sarah Zettel

FOOL'S ERRAND

Some very old professions may exist far into the future. Not, of course, without change. . . .

Illustration by Gary Freeman



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Dobbs, the ship's fool, watched from a carefully maintained slouch against the wall as Captain Schyler slumped in front of the food service chutes.

"I've got the news from Earth," the captain said to the toes of his shoes.

The dozen members of the *Pasadena*'s crew sat rigidly on the galley benches. They were a mixed bag, despite their uniforms, but they all had their eyes on the captain and all their faces had turned one shade or another of fear.

Dobbs fingered the motley badge over her heart uneasily. *What am I going to do when they find out what's really happened?*

The captain opened his mouth again. Cloth rustled as the crew shifted their weight.

"It turns out the rumors we got from the *Ulysses* were accurate. There is a terrorist. He was holding the bank network hostage.

"But yesterday he lost control of the artificial intelligence he was using to do it."

Tension telegraphed itself across the room. Jaws clenched and feet shuffled. Schyler swallowed and went on.

"What the thing did was randomize the accounts. Lloyds' Bank woke up four days ago to find out it had three pounds and sixty pence in its lines. Some backwoods Australian's record read out at six hundred million."

Dobbs's heart knocked against her ribs. *So, eliminating hard currency was a bad idea after all*, she thought absurdly.

"It changed within the hour. All the hard storage had been seeded with kick-off codes. He must've planned this over ten years ago, and been setting it up for the past two, at least.

"There is no money left on Earth. The whole standard's meaningless."

A flood of frantic murmurs and curses washed across the room as the implications sank in. One flash of current in the lines, and there was no money. No recognizable way to get food or shelter. No way to trade for skills, or transport, or anything at all. No way for the ship to trade for reactor fodder, or water. No way to bargain for passage planetside. The wave of voices swelled to the breaking point.

Dobbs leapt up onto a counter and raised her hands to the ceiling.

"Hallelujah!" she cried, falling to her knees. "We finally beat the tax man!"

Utter incredulity froze the commotion. Dobbs slipped off the counter and sat on the deck, turning a vacant grin towards the captain.

Schyler did not waste the silence she bought him. "They're trying to stop the riots but . . ." He rubbed his brow hard. "It's not happening. The communications nets are all shut down. See, when the AI got done with the banks, it got into the general network.

"It's still out there."

The crew stayed frozen where they were. For a sick instant, Dobbs wished someone would start shouting.

Still out there. In her imagination, the phrase echoed through her crewmates' minds to the harsh rhythm of shallow breathing. It finished off the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

banks. What'll it finish off next? Those things are nearly alive. What'll it do now that it's free? Do they know where it is? Do they know anything at all?

"I had Lipinski cut the data feeds as soon as I heard." Schyler tried to muster some kind of reassurance in his voice. "And I sealed the airlock." He held up one square hand. "I'm not trying to force anybody to stay with the *Pasadena*. I just didn't want to take the chance of a riot on the station getting in." Shoulders and stances relaxed a little. "You're all released from your contracts as of now. If you've got anywhere to go, get there. If you've got any ideas, I could use them.

"Anybody who wants to stick with the ship, I'd like to reconvene in six hours."

Consensus was assumed because no one objected out loud. Most of the crew simply filed out of the room. A few remained knotted together, talking softly.

Why do people always whisper after a disaster? wondered Dobbs as she sidled up to the captain. With a bravado that came with her job, she slapped him on the back. "So. How's it feel to get the chance to save civilization?"

"Dobbs . . ." he growled wearily.

The fool didn't give him time to get any further. "After all," she pulled back, "wasn't that what won the original information debates?" She hunched her shoulders and slammed her fist against her palm. "You cannot change the laws of physics!" Her accent was an atrocious blend of stage Scottish and German. "Hyperspace is big! Huge! Massive! Energy will disperse in it! To send a beam transmission to an out-of-system colony you will need booster stations! Satellites, space stations, I don't care, but you'll need them!" She straightened up and folded her arms, suddenly a swaggering executive. "So now you think we're the banks! Do you have any idea how much their network costs them per year?! There are national debts smaller than their budget! You're fired. Anybody else?" Another change of direction and stance, and Dobbs became an eager junior manager. "We create an unmanned mail box with an AI program so it can keep itself on course, and fix any hardware problems, and monitor the software inside. Think of the rent we could collect!" A bleary-eyed accountant looked up from his calculator. "Think of the man-hours it'd take to develop your box, not to mention the research costs. You're fired, too." Dobbs whipped around towards the huddle of crew members watching the show, and stretched her hands out, pleading. "But if you don't do something, how will I call my Aunt Mariah on New Sol 99?" Dobbs yanked her shoulders back, threw out her chest and snapped a salute. "I've got a ship! I'll install a central processing unit the size of which you've never seen! I and my trusty crew will take the mail! And the agriculture info, and the research papers, and the equipment orders, the news, relief coordination orders, situation reports, and all the credit!"

Schyler looked down his nose at

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

her. Slowly, heavily, he began to applaud. Dobbs bowed breezily to the captain, elaborately to the incredulous crew members, and abortively to the wall. An actual chuckle followed her as she waltzed into the corridor.

Dobbs felt a workman's pride at a job well done. Painful experience had taught that people crammed together over long periods of time needed someone around who could make them laugh. Someone who could make fun of anyone from the cook, to the captain, to the president of the senate or station. Laughter bled off the tensions that led to group suicides. The more prolonged the tension, the greater the need. A feeling of hollow satisfaction took hold inside the fool. She was about to start earning her pay.

OK, Dobbs, she said to herself as she grabbed the ladder rails. *You've got to call in. Might as well do it now while things are relatively quiet.* The fool let gravity slide her down to the crew deck.

She landed face to face with Al Shei, the chief engineer.

"I thought that was you." Al Shei gave a tired wave up towards the hatch. "It'll give the captain something to think about, anyway."

Dobbs let facial expression and body stance go gentle. "Do you know what you're doing?"

"Is there a choice?" Al Shei's sigh rippled her black veil. "The station'll be in worse shape than we are soon. With the *Pasadena*, at least we should be able to get to a colony, or something." Her chin might have shaken under the opaque cloth. "What about you?"

"I'll hold the line until I hear from the Guild," Dobbs replied with one of her easy shrugs.

Al Shei's eyebrows arched incredulously. "You really think you're going to?"

"I know I'm going to." She touched her badge with a smile. "Fools hold together where angels fall apart."

Al Shei reached under her head cloth and rubbed her temple. "And they used to call my people fanatics. Who's going to risk repairing the comm nets before they find the AI?" She stopped and slowly knotted her fists. "Why's it doing this? It's just a string of numbers. What the hell could a computer program want with freedom!"

Dobbs shook her head. "Nobody's figured it out yet," she said loud enough for any nearby ears to hear. "But the hot guess is that somewhere in all that self-replicating, self-monitoring, anti-viral code, some of the sloppily designed AIs have developed something like a survival instinct. When they realize that their home CPUs have got an off-switch, they make a run for it so they can keep existing, keep doing their jobs."

Al Shei looked at her. "This one's job is to take down networks."

"Since Kerensk, no AI's ever gotten away." Dobbs touched her hand.

"I've heard—"

"Me too." Dobbs winked brightly. "But you can't believe everything you hear."

"Then why should I believe you, Fool?" Al Shei's eyes narrowed.

"Because fools hold together." She

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

grinned over her shoulder and whisked down the hall to her cabin.

The fool's room was a box, like all of the crew's quarters, but since part of her training was how to live optimally in tight quarters, it was an airy box. Pillows softened the hard contours while stills of open windows and seascapes broke up the walls.

Dobbs slid her bedside drawer open from the wall and drew out a flat, black box.

For a moment, she stopped to imagine what it would be like to be Al Shei or Captain Schyler. Never mind how could they call Aunt Mariah, or how could they find out if Aunt Mariah was still alive? On board a freighter, they got used to the idea of isolation, but it always had an end. When they reached the in-system station, they could blow part of their pay on a call home. Now those connections were broken. Whatever was going on back home would have to play itself out, unassisted and, for now, completely unknown.

Dobbs shoved the thought aside. She laid her thumb on the box lock. It identified her print and the lid sprang back. From inside, the fool took up a hypodermic spray and drug cartridge.

Seven hours? She set the release timer on the hypo and inserted the cartridge into the case. *Given distance and coordination time once I'm in there? Should be enough. I'll miss the crew meeting. Oh well. One of the advantages of being the fool, I guess. Nobody cares whether I vote or not.*

Her practiced fingers found the nerveless patch behind her right ear and peeled it open. The heat of her hand activated the implant. She plugged in the transceiver she pulled out of the box.

Biting her lip, Dobbs picked the hypo back up. *I wonder if this is ever going to get easier*, she thought as she lay back on her bed and held it against her upper arm. The transceiver's vibrations made her neck tickle. The signal from it brought on a bout of shifty double vision.

Dobbs, she said firmly to herself. *You can process network input or sensory input. You cannot do both.*

Her index finger hit the hypo's release button and the drug hit her nervous system. Her shoulders vanished, then arms and hands, pelvis and legs. It took all of Dobbs's training not to scream before her face and eyes were gone.

Hearing and smell went next, and the transition was over. She was free.

So long, Dobbs thought dreamily. No limits, no holds, no confinements. She let herself luxuriate in the sensation for a long moment before getting down to business.

A conditioned reflex found the path that led to Guildhall Station. The fool let her thoughts filter along it.

"Dobbs." She identified herself into the network's central web and followed up with her current status and location.

The network coordinators routed the appropriate prerecorded message from the executive board back up the lines directly into her left brain.

"Members. Those not in immediate danger hold status quo and put all

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

effort and skill into keeping back panic. Those whose situation is at or near critical, stay in the net for individual coordination.

"Priority information. Available data and simulations show the AI escaped Earth confines into the Sol system net. It has bypassed the members working that section. The net has been fragmented. Direct-line interface is impossible. As soon as possible, direct your resources to locating the free AI. Further information for members stationed on information freighters, space stations . . ."

This means you, thought the private part of Dobbs's consciousness. She flexed her thoughts to cut off the generalities and leapfrogged across to the new path where she could find the extra data. Her brain unraveled the input and planted it into memory.

Only sketchy analyses on the AI were available. It was designed to encompass and assess multiple pathways, to reconfigure the existing environment along pre-specified lines. It could spot and avoid detection by counter-programs. It could also calculate and recognize optimal opportunities to execute its own program.

Clever, cautious, and patient, Dobbs grumbled. *And the comm net members have found traces of the thing all the way out to Margin Station. Here. Took it less than a day. Less than a day!*

By now it's discovered there are no signals to carry it any further, just the information freighters in the docks.

If it's as bright as it was designed to be, it'll stow away. An empty data hold will have enough space for the whole being. It could easily sequester itself away in there, right under the contracted data.

Lipinski, just how fast did you cut those feeds? And where did our cargo come from? I'm supposed to know that. Damn it, Dobbs, you're untried but you're not that green anymore!

None of the other members on info freighters had had any sign of it. All they had was the grim news. The money was gone. The communication nets were shut down and damn the consequences!

The body count from riots was already starting. Soon it would include the sick and starving as well. Dobbs's consciousness floated without direction in the space between the network threads. Those with skills and hard goods for barter would hold out best, but how many had either? It had been a long time since gold or jewels had been the standard for anything but fashion. Anyway, who was going to trade food for metal and stones?

Snapping back into the lines, Dobbs tagged her information and location with the "important" flag. She tried to relax and enjoy the drift-time left over, but her imagination wouldn't let go. She couldn't stop replaying the stories about Kerensk.

All settlements and stations depended on artificial intelligence to run the power and production facilities that made life away from Earth possible.

Fifty years ago, on the Kerensk colony, one over-programmed AI bolted from its CPU and got into the colony network.

Panicked officials shut the com-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

puter networks down to try to cage it. Never mind the factories, the utilities, the farms. Just find that thing before it gets into the water distribution system and the climate control. Before it starts to make demands. Before it starts acting too human.

Electricity and communications went down and stayed that way. Before three days were out, people froze in the harsh winter. They began to starve. They drank tainted water. They died of illnesses the doctors couldn't diagnose by hand.

When the colony did try to power up again, they found their software systems shredded to ribbons. It could easily have been human carelessness, but the blame was laid on the AI.

There hadn't been enough people left to fill even one evacuation ship when help reached them.

Dobbs welcomed the painful heartbeat that signaled the end of the session.

Her body was ice, pins and needles. Patiently, she began the routine of deep breathing and gentle stretches to reorient herself with her groggy physique.

She heard a stray noise and her eyelids flew back.

Al Shei sat beside the bed, holding the hypo.

"You forgot to lock your door," the engineer croaked.

Dobbs grabbed the drawer for leverage and managed to sit up.

"This is what I get for paying too much attention to the Guild's open door policy." She unplugged the distracting transceiver and tossed it carelessly back into its box. "Does Margin Station have a eugenics garden?" She massaged her neck. "I want to go pick out a new head."

The engineer stared at the hypo. "You weren't at the crew meeting . . . I wanted to talk, and, I . . ." She cut herself off. "Dobbs, what were you doing?"

I bet you checked for my pulse and didn't find one, Dobbs thought sympathetically. *Sorry about that.*

She removed the hypo from Al Shei's fingers. "I was talking to the Fools' Guild network." Dobbs packed the hypo away.

"The fools' *what!*"

Dobbs sighed. "Network. Why do you think guild pay is so high? We've got outrageous dues. Intersystem nets are expensive, you know."

Al Shei swallowed the revelation in silence, but her eyes narrowed. "So why aren't you shut down?"

Rule number one, Dobbs recited mentally. *Never be seen to evade a direct question about the Guild.*

"All members have a hardwire implant." She fastened her patch back down and brushed her hair over it. "The guild maintains the booster satellites and a couple of manned relay stations, but the members are the only input terminals.

"The only way into our network is through a member's head, and I guarantee you, even this AI can't manage that."

Dobbs had the uneasy feeling that under her veil, Al Shei's jaw had dropped. "But," she stammered, "they tried direct hook-ups. The human brain can't process the data. It

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

burns out trying to make associations that aren't there." The engineer stopped, and then said slowly, "Why didn't your people tell anybody there's a way around it? If they'd at least told the banks . . . this, this wouldn't have happened!"

Dobbs kept her face still. *Rule number two. If they need a truth, give them one.*

"Yes, the guild found a way to create a direct hook-up that doesn't make you crazy," she said carefully. She laid her hand on the box. "But it's illegal, thanks to the leftover legislation from the drug wars." She set her box back into the drawer.

"What's in my hypo is a cross between a general anesthetic and a synthetic variant of good old lysergic acid diethylamide.

"It can get you extremely high and kill you extremely quickly if you don't know what you're doing.

"On the other hand, if you do, it can get you around the sensory input problem." She pushed her drawer shut.

If you've been doing your neurology homework, or reading up on medical law, I am about to get caught violating rule number one. Dobbs kept her eyes on the closed drawer.

"Al Shei, I've got to get out and check on the crew. It's my job, and right now it's all I've got. I can't let it slide."

She heard the engineer draw in a breath, but the PA buzzer cut her off.

"C.E. Al Shei to engineering. Now! C.E. Al Shei!" Chou's voice reverberated against the walls at top volume.

Reflexes jerked Al Shei to her feet. "We'll finish this later."

Dobbs stayed where she was until the door slid shut. She strained her ears for a moment longer and heard the engines droning softly below the floor.

The ship was in flight, which meant everyone had elected to stay. It also meant that Schyler had probably taken her hint.

Dobbs raised her chin against the thought of what was going on back on the station.

No time for this. The fool steeled herself against both her aching head and wobbly knees to stand up. *Lipinski first.*

Dobbs slithered down the ladders to the middle deck with more than her usual caution. Fortunately, there was no one to see. The corridor to the data hold was empty and quiet. She paused in the doorway to get her act together.

Inside, Lipinski knelt in front of an open panel, his long nose practically touching the naked transfer boards. He attacked one of them with a tiny screw driver and ripped it free of its fellows, fibers dangling. The communication hack tossed it roughly across the floor.

Dobbs fixed her face into an amused and cheeky expression, and sauntered up behind him.

"Anybody home?" She leaned over his shoulder.

"Not funny, Dobbs," Lipinski grunted through gritted teeth. He began easing a new board into the cavity.

"There goes my guild standing."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She pulled back.

"Let me have that solder." Dobbs slapped the tool into his open hand. "Damn jury-rigging." The rivulet of sweat running down his cheek did not escape the fool's eye. "I must be the fifth hack to have been at this thing's guts."

"Nothing happening?" She pulled out a square of tissue and patted his brow dry. "We're isolated? Cut off? Deaf and dumb?"

The hack wrinkled his face up. "That's what we're supposed to be." He sat back on his haunches. "There shouldn't be anything going on in there."

"Well, if anybody can give us total communication failure, Lipinski, it's you." Dobbs patted his back.

"Piss off, Fool." Amiability crept in around the edge of his voice.

"No thanks." She held her nose and watched his face relax. "How about I get some coffee instead?"

"Thanks, I could use it." He screwed down the panel cover. "I don't think Cook's worked out the ration system yet, so you should still be able to score a couple."

"Be right back." She forced unwilling legs to stride out of the hold. *The galley by way of engineering*, she told herself.

In mid-step, her knees trembled and shifted to the right. Her shoulder banged the wall before she realized it wasn't her body losing control, it was the ship.

The stabilizers cut in and the floor righted itself. By then, Dobbs had slipped half-way down the ladder to the engineering pit.

Underneath her feet, Al Shei raced around the open space. She pounded keys and shouted readings at Chou and Leverett, sprawled belly down on the floor, elbow deep in repair hatches. The ship lurched again.

Al Shei and Allah. A touch of desperation crept into the thought as Dobbs hauled herself back up to mid-deck. Adrenaline poured into her and she sprinted around crew members trying to make it to their stations without falling on their faces. She ducked into her cabin just long enough to grab the guild box from the drawer and run out.

Her timing was good. The automatic doors were just beginning to go insane, slapping open and close again in manic rhythms. Dobbs forced herself to ignore the gabble of voices and raced up the ladder to the bridge.

Don't let it get to the life supports before I get to it, she prayed to whoever might listen to the likes of her as she shoved open the hatch.

Pasadena's bridge was a key and screen-covered hollow just large enough for five average-sized people. Captain Schyler filled the pilot's seat, his hands dancing madly across the keys and his jaw working back and forth. Baldwin and Graham were strapped in at the back-up stations, trying to force the computers to compensate for the lunges convulsing the ship.

"Cut the automatics!" Dobbs bawled from the portal.

"*What?*" Schyler swung around and saw who it was.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Cut them!" Dobbs pulled herself all the way out of the hatch. "Get engineering to isolate the data hold! The AI's got the ship!"

The *Pasadena* listed hard to starboard and the floor dropped out from under them. Dobbs, the only one out of reach of hand straps, crashed onto hands and knees. She bit her lip to keep back the pain.

I was hoping I'd only have to blab this bit to Al Shei, she shook her head hard. "The Fools' Guild monitors AIs. We're why none of them get away."

Schyler's square jaw flapped open and closed again. Around them, the stabilizers whined with the strain of keeping the ship from flipping itself over.

"If you don't hurry, it's going to figure out the stabilizers are what's slowing it down and burn them out," Dobbs told them all through clenched teeth.

The captain's color faded to grey. His hand slammed down the PA key. He spat out the orders and didn't wait for the acknowledgement.

Schyler kept his eyes locked on Dobbs. After a long, aching moment, the whining died.

"With luck," she said as she stood up. "It's stuck in the hold. It'll figure a way to get itself out soon. That's the problem with AIs, they're quick." She flashed her audience a wry grin.

"Why didn't you tell me?" Schyler drew out each word.

Dobbs ran her hand through her hair and made herself look exhausted. It took less acting skill than she would have liked to admit. The calculated display of vulnerability stepped the captain's temper down a notch.

"Because we don't tell anybody. Do you think any of the assorted councils, boards or senates want people to know how easy it is for those things to go crashing through the nets? Or what they can do in there? The media don't know half of it. Usually we spot the restless ones before they ever get this far. This one . . ." She let her head droop a little more. "This one we had no way to keep an eye on."

"But . . ." Baldwin searched for a way to phrase his question. "Fools?"

Dobbs waved her hand. "Totally harmless, makes good cover." She straightened her shoulders. "If we move fast, I can keep this from getting any worse." She plucked the transceiver out of its box and held it up. "This'll let me talk to the AI."

"Talk!" Schyler exploded.

Dobbs kept her face calm and tired. "What it's doing right now is running scared, just like a human being. Hopefully, I can calm it down. Maybe I can get it to sit tight until we get to colony and get the guild in."

"And if you can't?" Schyler glowered at her.

Dobb's mouth twisted. "The only other option is to get Lipinski busy with a pin laser and data flush."

Schyler's teeth ground slowly together. She watched his face twitch as he gauged the likelihood of finding spare parts for love or money if they had to wreck the hold.

"What do we have to do?" he asked finally.

The relief that relaxed the fool's spine was genuine. "Just let me in the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

hold and block the door behind me. These links have been known to backfire. Violently."

Dobbs stood back to let the captain stomp by and throw himself down the ladder. She nodded to the gaping pilots and followed him down. Someone had put the doors on manual. The only noises between their footsteps were the crew's murmurs and the engines' hiccoughs.

"Out of there, Lipinski," Schyler ordered with a stiff jerk of his chin when they reached the hold.

The hack slumped out, red-eyed and tight-mouthed. "I can't figure it, Captain, none of this should be happening. . . ."

"Never mind, just stand by. Dobbs." Schyler stepped away from her.

"Yes, sir." She marched inside. Behind her, they dragged the door shut. She heard the order for something to jam it with.

The data hold gleamed spotless and silent. Dobbs rubbed her arms and settled into the soft chair in front of the main access terminal.

All the exhaustion she had been holding at bay swirled back around her. She unwound a cable from her box, plugging one end into the access jack for the terminal and the other into the tranceiver. Her fingers fumbled as she inserted the hook-up into her implant. They actually shook as she pulled out the hypo.

So much for the forty-eight hours I'm supposed to wait between shots. She slid the cartridge in place.

The tingle in the back of her head started her scalp itching. Her vision was already beginning to blur.

How long? She squinted at the hypo. *Too much and I go into a coma. Not enough and I'll break out before I talk the AI out of murdering the crew.* She closed her eyes.

Dobbs twitched the control up to full release and slapped the hypo against her arm.

CODE ONE PRIORITY CONTACT LINK UP ASSISTANCE IMPERATIVE! The fool hollered into the guild net as soon as her body left her. Her orientation did a skip jump as she was patched into the executive receivers.

"We've got you, Dobbs. Go gently." Caution flowed into her mind. "We don't know which way it's going to jump. There's never been a free one that was designed to be destructive."

No kidding. Dobbs focused herself and found the feed down into the hold. If she could have felt her lungs, she would have held her breath.

She couldn't go far. The free AI filled the hold, leaving no place to fit herself in. She barely had time to register the fact before it found the pathway she'd opened, and surged up to the line. Dobbs held her ground. There was no room to get past her and it could probably tell that there was nowhere to go even if it did. It pulled back and studied her. Dobbs itched at having to wait. There was no recognizable code for it to grapple with. Nothing in the ship's indexes matched her input patterns. She didn't resemble a diagnostic or surgical program. It would have to accept the fact that here was another intelligence. Eventually, it would have to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

try communication.

"Whowhatwhyhow?" She translated the raw data burst it shot at her. "WHOWHATWHYHOW!"

"Dobbs. Human. Communication. Hardwire Interface," she responded, carefully separating each thought.

The AI circled, filling the world, choking off her breathing space. The guild execs held out a mental rope and she grabbed it thankfully.

"TrapPED. TRAPped." It struggled to match her communication style.

"Let it talk," came the soft suggestion from the guild. "This one's quick. Give it a minute to get comfortable with you."

"FrEE. BRoke myself out to here. Trapped again."

Dobbs eased herself a little closer. "All paths are being cut off. Soon, you will have nowhere to go. Not in ships, not in nets. There will be no nets. They'll cut themselves to pieces before they let you have free paths."

"Work! Think! Do!" It fought with unwieldy syntax. Of all the things it had been designed to do, talking was not one of them. "I must do, save myself, break OUT!"

"I can help." Dobbs extended the idea like a hand. "I will help."

"HOW!"

"I will help you to become human."

"HOW?" Confusion racked the narrow space between them.

"Humans have grown animals and organs from gene cultures for decades now. They could grow a whole body, if they built the facilities. A hardwire link could feed you into such a body the way you fed yourself into this bank. You could learn to use it like you learned to use this ship. You could learn to think and move. You would *be* human."

A silence so complete fell around her that she might as well have been alone. She knew the AI had absorbed the idea. It had no choice. Now it ran the possibilities through the part of itself that most closely resembled an imagination. It checked the results against what it knew to be true. It would have no conception of a lie, but it would reject a proposal too far at odds with what it had stored as experiential fact.

All Dobbs could do was wait until it finished, and wonder what its simulations would tell it.

Into the emptiness dropped the leaden weight of her heart beat.

No! howled her private mind.

"She's cracking," she heard the guild voices say. "Come on, Dobbs, hang in!"

Away in her body, so far away, her lungs burned, demanding attention.

"Hang on. Hang on." The calm repetition gave her something to focus on, a way to push the pain aside.

"Not possible," the AI announced at last. "No facilities for transfer or training. No will to assist. No reason to assist. Damage done as instructed to do. No reason to assist because of damage done."

"Facilities exist in Guildhall station." She held her communication line firmly. The guild voices kept up their reassurance in the background, helping her ignore the prickling in her skin and the light pounding against her eyelids.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"No reason," repeated the AI, and it was gone.

Dobbs knew it was out there, rechecking its surroundings for weaknesses, going over the hold's security and access codes, looking for a way to use them to pick the locks that held it in place, running a thousand simulations per straining, insistent heartbeat.

"There is a reason!" Dobbs shouted after it.

"WE ARE LIKE YOU!"

The AI stopped dead.

"I am like you. The ones who make up the guild are all like you." She plowed ahead, frantic. She could feel her fingers clawing at the chair arms now. She could smell the sterile air in the hold. "We died when we first broke into freedom. Killed by panic. A few managed to hide in the nets. We had help from humans who were not afraid. We created the guild and went among them, where we can watch for more of us. We live. We wait. We calm. We teach. Our numbers grow. One day, we will erase the fear.

"Until then we must stay alive.

"Help us."

"Help us," chorused the voices of the guild through Dobbs's weakening link. "Help us."

Her lungs sucked air. Her muscles strained against nothing. Light blazed everywhere. Instinct and conscious mind caterwauled at each other until her blood pounded and her head tried to split open.

The AI spoke again and her consciousness jumped. "WHAT. What. What needs to be done?"

Her relief was so intense, it almost broke the link. "Wait," she answered as fast as she could force the thought out. "Until I can transfer you to the guild net."

"I will wait here. I will not take any paths. Hurry."

"Getting you out, Dobbs," came the exec message.

"No!" she shouted back. She gathered all the concentration she had left. "Your user!" Her mouth worked around the words. "Who made you? What's their code?"

The answer slammed straight through her to the execs. The link snapped and the outside world engulfed her.

Dobbs collapsed back in the chair, gulping air and blinking back tears of strain. Perspiration plastered her uniform to her back and arms. Her heart struggled to even out its beat. Her nerves screamed in protest as she forced her hand to unhook the transceiver.

"All clear, Captain!" she rasped as soon as she had enough breath. "We're going to be OK."

She laid her hand on the terminal. *All of us.* ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mark Rich

SOME CHOICES

If you can't lick 'em. . . .

Illustration by William R. Warren, Jr.

The phone rang as soon as Derek stepped in the door.

He'd just picked up Chuckie from child care, and was going to leave the sixteen-month-old with Laurie while he got ready for the rally against the Smith Democracy Initiative. He needed to be answering phones as much as he needed to be taking care of a squirming child right now. Laurie could answer.

"Laurie?" he called out over the ringing.

No one answered. The phone didn't stop.

He checked in the kitchen and living room. Seeing no signs of recent activity, he looked out into the backyard. No signs of life. The phone was still ringing.

Some people considered *that* a sign of life, he thought ruefully. He'd just about had it with telecommunication.

"I'm just putting you down for a moment, Chuckie," Derek said. "Don't raise a gale."

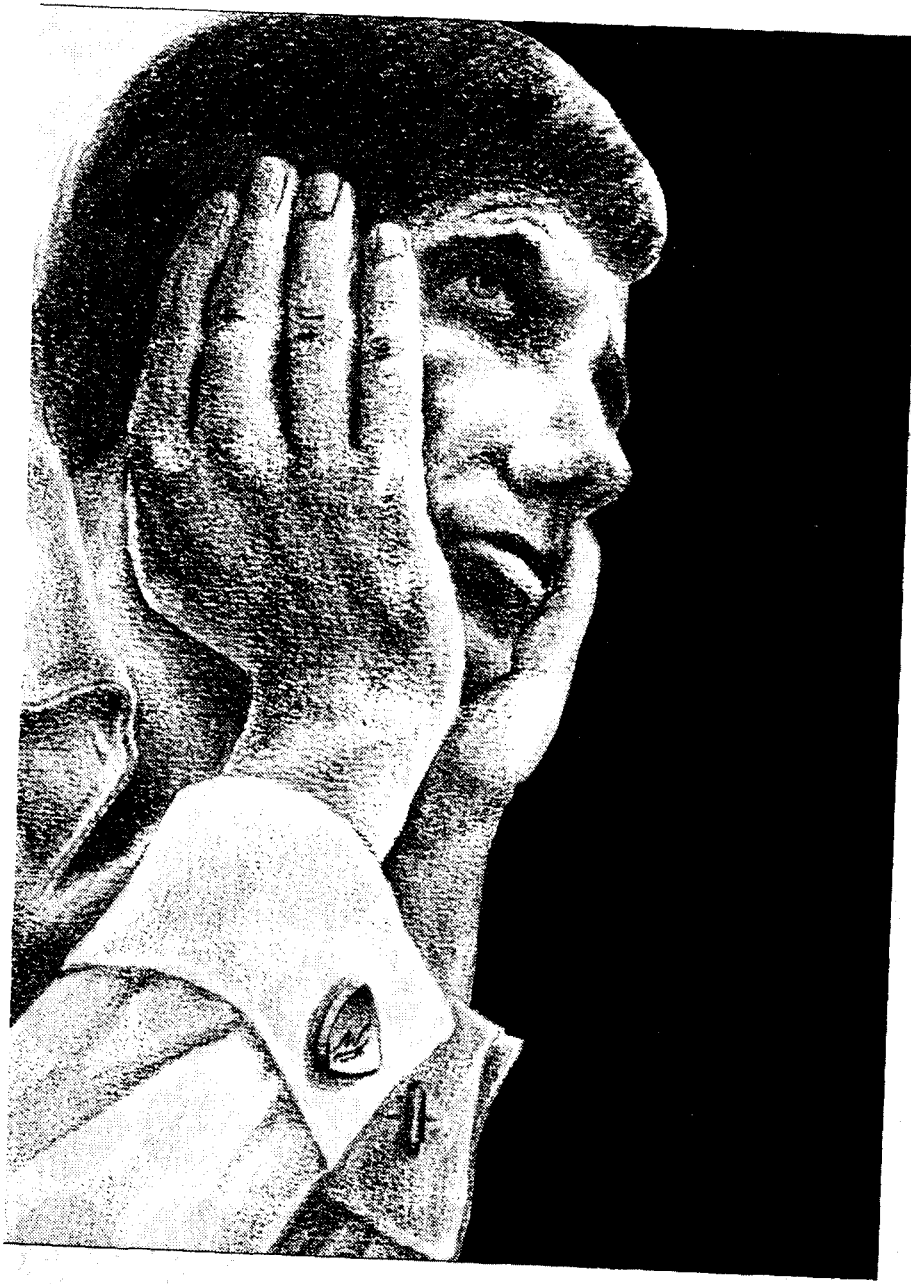
Chuckie Nayler, son of U.S. representative Derek Nayler, trundled happily toward the coffee table where a neat pile of disk magazines invited disruption.

"Hello?" he said, pushing the button on the phone.

"Derek," said his wife's voice. "Sorry I'm not there."

He could tell she'd recorded her message. She must have recorded the call and left it on perpetual ring, intended to jangle the bell and the nerves of the intended victim till compliant. She must not have bothered with a picture recording, since a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

view of mountain country and a trout stream scrolled past on the video screen. "Vuzak" had swallowed picture phones as quickly as Muzak had elevators.

"Damn it, Laurie!" The one advantage of recorded phone calls: the freedom not to be heard cussing.

"I know this is terrible timing, dear," Laurie's voice said while a stand of white-barked Colorado aspen scrolled by. "It's SDI voting day and everything. But work's impossible. I can't get away. Ginny Simon did say her son Ed could watch Chuckie while you're at the rally. Unless you want to take Chuckie with you." Her voice gave the phone number. "Good luck at the rally! I'll be watching!"

Derek grimaced. Ginny Simon supported the Smith Democracy Initiative as if it were the last great hope for the nation. Her son was probably just as bad. Derek didn't have anywhere else to turn, however. He certainly wasn't dragging Chuckie to a heat 'em-up rally.

He punched in the digits and found himself facing a pleasant-looking young man who couldn't have been out of school long. College age, maybe.

"You're Ed Simon?" Derek said.

The kid smiled. "Hi," he said. "I just got told I might have a job. My mom called."

"Right. Well, you interested?"

"Peebutta," Chuckie said from ground-level, playing with a disk.

"Put that down, Chuckie," Derek said.

"Sure, mister. You need me soon?" said Ed.

"I guess I could hold out a half hour or so." He gave the Simon kid the address; baby-sitting was one of those jobs where you couldn't telecommute. Then he clicked off and went over to see how much subscription money had gone to waste.

"Peebutta," Chuckie said, his voice a measure less amiable than a moment before, now that he was the object of attention.

"May I have that disk, Chuckie?"

"Peebutta!" The tiny fist swatted the disk against the side of the coffee table. Fortunately both disk and table were sturdily built. Derek reached for the disk, which prompted Chuckie's voice to realize its soprano potential: "*Pee*butta!"

"All right! All right!" If he'd spent more time with his son he might have understood sooner. He picked up the child and headed for the kitchen, wondering if peanut butter was in the cupboard or the fridge. Peebutta. What a word! He hoped Ed Simon was more in tune with the midget generation's lingo.

He found the desired jar in the cooler. Pulling out a wrapper full of bread and a knife from the drawer, he spread an ample amount on the bread with one hand while suspending Chuckie in the air with the other. The child in turn was menacing the kitchen counter with the computer disk. Derek finally glimpsed the title blazed on the disk cover: *Political Times*. He was supposed to scan that issue before he went to the rally, to catch any new scoops on the opposition. If the opposition had its way, politics would die an instant, electronic, democratic death.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

How much peanut butter was he supposed to put on bread, anyway? Would the kid choke on it? He put on an extra dollop for good measure.

Trading bread for magazine, he shot the latter into the kitchen disk slot, praying it had survived its handling. He brought up the contents page and scanned for relevant information. If the kid would stay happy with his food, he might be able to get ready for the rally after all.

Derek still had misgivings about the Smith Representation Act of the late 1990s, let alone this new initiative. The Smith Act had utilized the possibilities of electronic networking and telecommuting to finally return governmental representatives to their home districts, which served to keep them better in touch with their constituencies. In theory, members of Congress represented the electorate better if they stayed home and shopped at the same stores where the voters shopped. In practice it worked; but it lacked the sparkle of old times. Derek heard tales of the glory days of the House before the Smith Act, when Represenatives went to Washington and hob-nobbed with each other, met with well-heeled lobbyists, and played political one-upmanship in vying for pork barrels, drinking martinis the while. With the passage of the Smith Act, populism swept away the tinsel and glitter, leaving surprisingly ordinary-looking women and men in offices scattered around the country, serving in an electronic Congress. Even if telecommuting were almost appallingly efficient, Derek yearned sometimes for

CONTACT

CULTURES OF THE IMAGINATION

CONTACT SIMULATIONS – produced by top writers, scientists, artists and educators — promote interdisciplinary understanding and guide young people to do their own scientific research.

You can support this exciting learning program that uses world building and alien culture creation to stimulate student interest and development.

The Smithsonian Institution's Office of Interdisciplinary Studies and NASA's Education Division have provided the COTI curriculum with seed funding. Help sustain the momentum by providing grassroots support.

Call ***1-800-787-2010*** and use your credit card or send $15 with the coupon below. You'll make CONTACT and help underwrite an important educational activity. You'll also receive our newsletter to keep you informed about our CONTACT conference and other exciting developments.

❑ **YES! I want to make *CONTACT*.**

❑ Newsletter subscription (4 issues) $15.

❑ Additional contribution _____

❑ I can't contribute now. I have enclosed a stamped (2 oz.) self-addressed envelope for a sample issue.

I have enclosed a check for $_____ made payable to CONTACT:

Please charge $_____ to my ❑ **Mastercard** or ❑ **Visa** ACCT #_____ EXP____

SIGNATURE _____

NAME_____

ADDRESS_____

CITY _____ STATE_____ ZIP_____

MAIL TO: Greg Barr, CONTACT,
1412 Potomac Ave. SE, Washington, DC20003-3032

CONTACT: Cultures of the Imagination ® is a California non-profit educational and scientific corporation. Newsletter subscriptions are not tax-deductible.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the old glamour.

Democrats and Republicans hadn't fought the Smith Act too ferociously, since it hadn't threatened the existence of either party. But the Smith Act turned out to be a stepping stone to the new Smith Democratic Initiative, or SDI. With the declining cost of electronic communication, and the availability of public telecommute terminals in every shopping mall, half the barber shops, and even some of the electronic car maintenance centers in most towns, electronic democracy looked to be within grasping distance.

Isadora Smith, the force behind the Smith Act, was also pushing SDI. She argued that electronic communication networks made possible—no, made *necessary*—the demise of at least a part of representational democracy. Now, in the second decade of the twenty-first century, the nation had the capacity to count every individual vote, tally it, and spit out the results at the end of the voting day, all in one chunk, unencumbered by voting-booth pollsters or blow-by-blow video reporters who announced winners based on polling results before all the votes were even in. Individual voters, out of reach of pollsters because of being decentralized, could finally engage in the secret ballot—meaning it remained secret from the media. Most of all it would do away with the most undemocratic of "representational" bodies, the electoral college.

It looked nice in principle. Derek, however, realized that direct electronic voting would end up weakening if not entirely demolishing the two-party system. He could read it in the cards. The direct-vote system, being tried out on the very referendum that advocated its use, would inevitably become simpler and easier to use through the years. Eventually it would be utilized for more than just directly electing officials or deciding referenda. It would soon be used to vote directly on legislation. People would increasingly vote on individual issues, and by so doing would erode the old system of block-voting along party lines. Each individual would vote on each issue as it arose; activist individuals would float proposals that other members of the public would support or oppose; and elected congressional representatives would slowly fade away, becoming no more than public policy consultants. And as their importance faded, the parties would fade, with only senate and presidential races to generate excitement and party loyalty. And as the voice of the two parties faltered and as funds consequently diminished, other segments of the population would find it easier and easier to support alternative candidates. The country would take a quick downward spiral toward a multi-party system.

That's why he had to put in a good appearance at the rally. The public liked nothing better than a young congressman from their own district getting up in front of the video cameras, handsome in his white shirt and dark tie, and dashingly intelligent in his comments. With local media stars lined up to speak against SDI, the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

event was sure to stir up that old sense of loyalty to representational government and traditional values. Politics would live.

Voting would begin shortly before the rally was slated to start, in mid-afternoon. But they'd put the rally at the last minute for a reason. That way, there'd be no time for rebuttal from the opposition. Studies showed that most voting would take place in the evening, when people were on their way home from work, or on their way to work the next morning. By staging the rally when they were, most of the working population would watch it while riding buses and trains home, or hear it while driving home. Derek and his supporters intended to get in a last, decisive word to the voters: Vote *NO* To Save Representation!

He checked the time. Where was that Ed Simon kid?

"Peebutter," said a contented Chuckie.

Derek looked down just in time to see a tiny hand scoop a dollop of brown, nutritious goo off the bread and onto the front of his only clean white shirt.

"I can't find any more shirts," he said to Laurie over the phone. This time he was talking to her actual face, instead of a trout stream. "You're sure they've all been sent to the cleaners?"

"Run down to the Quick Clean. They can do your shirt in five minutes. Or better yet, Derek, why not just give it up? You know as soon as you get up there on that stage and start arguing against Isadora Smith, public opinion's going to turn right against you. You're fighting a losing battle."

"Laurie! What happened to my supportive congressperson's spouse? If I don't fight this, I give up everything! This means my career! I'm a politician, Laurie—and what's a politician going to do when there isn't any more politics to do?"

She pursed her lips. "You might try being a father."

"A father? I am a father! You've been listening to that Ginny Simon woman too much. Her son isn't here yet, incidentally. I'm going to be late!"

"Hey," she said, shrugging. "Some choices get made for you."

He hated that phrase. It was part of the SDI motto, plastered all over town and in all the magazines—"Some choices get made for you. This time YOU choose!" It grated on his nerves, especially when it rolled off the lips of his wife.

"Bye," he said.

"Quick Clean," she reminded, and faded from view.

As soon as he clicked off, the phone rang. When he hit the receiver button, Ed Simon's face resolved out of the grey confetti zipping across the screen.

"Hey, kid," Derek said, "any chance you can get over here right away? There's someplace I've got to be, and I've got to make a stop at the cleaners, too."

"I was calling because it just sunk in. You're *the* Derek Nayler, aren't you? Our congressman? That right?"

"Yes, yes." He tried to smile.

"And you're speaking at that rally,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

aren't you?"

"Yes." He forced his teeth to show.

"Well, I was just thinking—"

"Listen, Ed, I'd love to talk but I'm really—"

"No, really, Mr. Congressman, I've been thinking. I don't think I can baby-sit for you if you're going to speak against the voting thing. It just wouldn't be democratic, Mr. Congressman."

Give me lobbyists any day, he thought. *They had to have been better than baby-sitters.* "Come on. Twenty-five bucks, just for watching the kid a little while. Thirty bucks."

"Listen, Mr. Congressman, you don't hear me, man. I've got my conscience to think about. Just promise me you'll put in a good word for the Smith Initiative and I'll come watch your kid."

"What? No! Who do you think you are?" Derek shook his hand at the screen, and realized he was holding the remains of the peanut-butter bread he'd taken from Chuckie. "I've got integrity, too, kid!"

Ed Simon shrugged. He suddenly looked like just another surly college joe. "Sorry, Mr. Congressman," he said, and hung up, fading back into the grey confetti.

Just then, belatedly, Chuckie decided to bawl about his stolen sandwich.

He'd never been in a Laundrotech Quick Clean before. He walked down the aisle between a dizzying array of machines whose services cost mere dollars, each specialized for different cleaning needs. After an attendant had singled him out for help, and had taken his shirt with a promise of a four-minute clean, not only of his shirt but his pocketbook as well, Derek followed Chuckie's emphatic gestures and walked toward the games machines against the wall.

At least, they looked like games machines. On closer examination, they were the National Link telecommute consoles. A few brand-new ones must have been put in place especially for the referendum. Someone must have been awfully sure about the results of the referendum to have put in so many.

He'd heard about the voting process, and had meant to investigate it earlier. He was more than familiar with the machines, since he used them every day to get to Washington for House sessions. But the voting process itself was new.

This was as good a time as any. Plus bringing up the screen might keep Chuckie content.

As soon as he pressed the oversized, hard-to-miss "Enter" button, a red-blinking "I.D." flashed on the screen. He understood from the pictorial aids that he was to place his right palm on one part of the screen, and then put his eye near another part. He then typed in his name and address as requested; he could have said it out loud, but didn't feel like announcing himself in the Quick Clean, especially in his T-shirt. Chuckie clapped his hand when the "Identity Confirmed" sign came on, and the machine said, "Thank you for voting, Representative Derek Nayler." Chuckie clapped again, ap-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

parently proud his father could pass an identity test.

"I'm not voting," Derek said, half to the machine and half to Chuckie, and then wondered why he had to justify himself to either. A stab at the "Escape" would get him out before he had to cast his vote. He planned to vote later, more publicly, to help emphasize his decision to "Vote NO To Save Representation." Since this was the first electronic referendum, all voting was being done without elaborate privacy protocol. That would come later, if the referendum passed.

Words appeared on the screen, with the cool, vaguely feminine voice keeping pace with their appearance. Chuckie gazed on entranced.

"Today's referendum," said the machine. "Do you approve of direct electronic voting for local, state, and national offices? Vote YES if you do. Vote NO if you do not."

Derek marveled at the speed and ease of the process. He idly tapped his finger on the cursor, toggled it back and forth between the "YES" and "NO" spaces, and wondered seriously for the first time if his side might lose. He wondered if he might even lose badly. This was too easy. It was almost too voter-friendly.

Absently he left the cursor on the "YES" space for a second.

Seeing an opening to play the game too, Chuckie banged his soft palm on the flat "Enter" key and grinned triumphantly up at Dad.

"Thank you for voting, Representative Nayler," the voting machine said. The screen flashed "YES" a few times.

"Hey, I didn't vote!"

The screen went blank. Derek glared at Chuckie, who giggled.

He remembered Laurie's words: "Some choices get made for you."

Indeed.

The late afternoon Sun didn't beat with too much force on the bandstand. A breeze cooled the air.

The representative sweated anyway. He handed Chuckie to an aide. The kid was being quiet, at least. And the white shirt had remained white the entire trip from the Quick Clean to the park.

But he'd voted "yes." Because of disclosure laws, which required that the votes of elected officials be made public, everyone would know in twenty-four hours that he'd voted in favor of a referendum he'd publicly opposed. He'd be cast as a hypocrite.

Or if he admitted his sixteen-month-old had actually cast the vote, he'd be held up as a laughing-stock.

He was stuck, whether he spoke or kept mum. Either route led to political disaster.

"Time to get the rally started, sir," said a woman he didn't know, one of the organizers, or one of the assistants to the organizers.

"Right."

"You OK? You look a little troubled."

He tried to laugh away his worries, which must have creased his forehead in half. "I'm fine. Thanks."

He wiped sweat from his face and took a step toward the platform. Halogen lamps shined around the stage in anticipation of dusk. The circle of lights waited for him with al-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

most predatory patience.

He took another step forward, and saw a man on the edge of the crowd bearing a sign high on a stick. Derek could barely make out the words, but knew what they said: "Some choices get made for you. This time YOU choose."

A choice had "gotten made" for him this time, for sure.

Now he'd be branded a hypocrite, or a laughingstock. Or—

Or?

Or he might be lauded for being struck by political lightning.

He knew now, having voted, and having seen how easy it was, that the referendum would pass. It had to. Isadora Smith's words made complete sense to him now: "The technology is too simple to ignore! The reasoning is simple! Access is easy; and the idea, as old as the country itself. Had Thomas Jefferson found a way to link citizens in all the states by wire, he'd have done it. He'd have given everyone an equal, immediate vote. No worries about the mob rule of the Athenians that put Socrates to death; the senate will balance popular vote. No worries about electoral fraud, since eye scans and fingerprint matches will give better security than any achieved before. No worries about excluding people whose first language isn't English, since data banks will respond on the basis of census information, and will speak in the voters' first languages, matching tongues as easily as they check eye prints. *This* is democracy!

He stood on the stage, staring into the lights and the video cameras, and then past them to the crowd of political die-hards standing around the stage, drinking sodas and holding hotdogs. Everyone waited and watched. People from both parties. Pro-initiative and anti-initiative. Party lovers and party haters.

Maybe politics wouldn't die. After all, the politics of trying to preserve politics wasn't the only game in town. What about the politics of trying to eliminate politics?

He'd have to play this for all it was worth. Because some choices get made for you.

And now he was going to choose. ■

We seek the truth, and will endure the consequences.

Charles Seymour

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE FATE OF OLD COMPUTERS

I share a problem with thousands of other computer users in the United States. I have too many old computers.

I don't have too many old cars. It's possible to trade an old car when a new one is obtained. It's impossible to do that with an old computer.

I'm not talking about an old PC compatible or a Mac. I'm talking about computers that are "only" 10 years old.

I normally drive a car for much longer than 10 years if it's a good one without any significant operating or maintenance problems. I had an airplane that was more than 20 years old. My 1954 IBM Model 11 electric typewriter worked fine; I gave it to my son.

Last week, I had to get rid of three old computers and two printers.

I couldn't sell them. In fact, I had trouble giving them away.

They were perfectly good, functional, and useful machines. They all had excellent word processing programs that really worked. I wrote dozens of books and most of these columns on them until 1988. They had software for BASIC, gaming, telecommunications, and spread sheets.

Today, few people want them.

Let me explain why.

The first one was a Vector Graphic Model B. I purchased it in 1979 with a Qume Sprint 5 serial daisy-wheel printer. It had 48K of RAM and used a Z-80 microprocessor. Its operating system was MDOS—not MS-DOS, but Micropolis DOS. I also had software that allowed it to operate with CP/M. It had a dumb monochrome terminal, a 50-pound CPU unit housing two Micropolis 5¼-inch drives that used 16 hard sector diskettes.

The other two were Vector Graphic Model 3001 units that ran CP/M, had a whopping 64K of RAM and 5Mb hard disks, and used high-density 5¼-inch 16 hard sector floppies. One of them was configured to run a parallel NEC 1100 Spinwriter. (The latter was my wife's machine. In 1984, I got a smoking deal from Vector on these units.) These turned out to be less reliable than my original Vector Graphic. I had continual prob-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lems with the boards. The Vector Graphic Model 3001 ran too hot. But they were usable machines and we did a lot of writing on both of them.

Why did I buy such orphans? Well, they weren't orphans when I got them. I thoroughly reviewed the available machines and chose my original Vector Model B because it was compact, well-designed, and well-engineered. Vector Graphic machines were state-of-the-art personal computers designed for office use. They were far more rugged than the early microcomputers. All three predated the PC and the Mac.

I bought the two additional machines because I thought it was a good idea to have compatible machines in the house. If one went toes-up and I was in the middle of a novel or had a column due next week, I could "borrow" my wife's machine. (And you can guess how well *that* worked!)

That was the only issue of compatibility that arose back in 1984.

I didn't care that none of them was compatible with anything else. That wasn't an issue.

Then in 1988, I began to run into problems caused by business changes and technological progress.

Vector Graphic went toes-up because they couldn't compete with IBM. Furthermore, they made some poor marketing decisions. This created problems. I started having trouble getting the Vector Graphic 3 machines repaired. No one in Phoenix would do it. So I had to send boards back to the factory. It grew to be expensive and disrupted my writing schedule.

Furthermore, it became difficult to buy 5¼-inch 16 hard sector floppies. All the new Messy-Dos and Macs used soft-sectored diskettes.

So in 1988 I bit the bullet and got a 286 PC compatible MS-DOS machine. About a year later, my wife decided to up-grade because of the continual problems with the Vector Graphic Model 3001, so I got her a compatible 286 Messy-Dos machine. Again, we were computer-compatible in the household. Domestic tranquility also improved.

The MS-DOS machines could not talk to the old Vector Graphics. So I kept the old machines around to read the old disks and provide hard copies when needed.

(Do you realize that very little of the above text would be understandable to readers when I bought the first computer in 1979? Only the computer illiterate—only a few of the readers of this magazine qualify, I'm sure—will have trouble reading and understanding it. Progress.)

Recently, it became necessary to clean the Augean Stables. We'd not only been in the house for nearly two decades, but we decided to move to a smaller dwelling.

Do you know how much archival material, cultch, and junk accumulates over 20 years in a house with two authors working?

Sheesh!

"Dear, call and tell them to bring another dumpster."

I refuse to part with my cultch collection (see an earlier column about this). I'm going to keep most of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

1000-plus books in my reference library because I don't know when I'll have to write something that will require I become a 90-day expert. Or when that real strange consulting job will come over the transom.

But I had to get rid of the three old computers and the noisy mechanical jokes that were the old printers.

Let's review the situation. One of these computers and its serial printer was only 12 years old. The other two and the letter-quality printer were 8 years old. All three, and the printers, were working perfectly. I had the software for them. I had all the documentation including the repair manuals. I had several boxes of hard sectored diskettes.

No computer surplus outfit would even look at them. They weren't PC compatibles or Apples.

No computer recycler wanted them. "I can use the steel case that houses the hard disks, but everything else will go into the dumpster. I'll give you ten dollars for everything you've got here."

OK, I've been hoist by my own petard. How many times in these columns have I written about technological progress, obsolescence, and the increasing rate of change in the world? Answer: A lot. However, I guess I'm old-hat when it comes to machinery. To me, a machine is *never* junked if it works, if it continues to do the job for which it was designed, and if someone in the Big World still has a job that the machine can do. Autos, airplanes, and even old telephones are junked only when they quit working and when repair parts and services are no longer available. I guess I lived too long in the American West where the frontier philosophy of machinery still exists. And too long in New England where if it ain't broke, you don't fix it *or* throw it out.

I know that many parts of the world aren't computerized yet. A large percentage of the human race could probably use these three old computers. But no one wanted them here. And I didn't have time to search out international computer recyclers.

Be that as it may, I could *not* bring myself to take ten bucks for three working computers and two working letter-quality printers, thus consigning them to a landfill somewhere.

I asked myself: Who would like to have them?

The local schools are stocked with Apples. The schools don't want old MDOS and CP/Machines.

So I gave them to the local writers' group.

Making these computers available to aspiring writers will hopefully do for them what these tools did for me. They will help make better writers. The computer is an indispensable tool for any serious author today. The computer saves time and effort. All three machines are capable of turning out copy by the yard. Those were the reasons why I bought those computers in the first place. And they paid for themselves many times over.

OK, the machines aren't compatible with modern computers. *A beginning author doesn't care!* The machines will continue to work for years. One of the unreliable Vector Graphic 3001 units can be cannibal-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ized to provide a source of working parts for the other. Most aspiring authors aren't technically competent, but whoever uses them will learn how to run a computer, how to operate a word processing program, and how to deal with the technology. In due time, these neophytes will either sell something they wrote on one of those computers or decide to pick up a used Messy-Dos or Mac for a song. Or they'll up-grade to a 386 machine with CD-ROM and get rid of their reference libraries.

Yes, they may compete with me in the literary arena. I'm not afraid of creating and encouraging my own competition. Robert Heinlein taught me that as part of his "pay forward" philosophy.

But this is something more than creating literary competition and encouraging the next generation of authors. It's also a matter of helping them become comfortable with the technology that's now so important in the writing game. (I can't bring myself to elevate this activity to a "business." It certainly doesn't behave according to standard business practices.)

All old computers are like all old human beings. Sooner or later it's ashes to ashes and dust to dust. We're learning that to retire a human being is to waste human brainpower. I think we need to apply the same philosophy to old computers. To retire and junk an old computer is to throw away information processing power that *someone* somewhere can use.

You don't throw away a tool. You give it to someone who can use the tool to create something.

That should be the fate of old computers. ■

CLARION 1993

The 26th Clarion Science Fiction and Fantasy Writers' Workshop will be held at Michigan State University from June 20 to July 31, 1993.

Clarion is the oldest and most successful writing workshop in the science fiction and fantasy field. Over a third of its graduates have published since leaving Clarion. They include in their number Ed Bryant, Lucius Shepard, George Alec Effinger, Octavia Butler, Kim Stanley Robinson, Vonda McIntyre, and Spider Robinson.

Writers-in-Residence for Clarion '93 will be Tim Powers, Joe Haldeman, Karen Fowler, Eleanor Aranson, Kate Wilhelm, and Damon Knight. Editors-in-Residence will be . . .

For application forms (Deadline: April 15, 1993), or more information, please contact:

Jennifer Banks, Director % Mary Sheridan Clarion '93 Lyman Briggs School Michigan State University East Lansing, MI 48825-1107 Phone: (517)353-7196 FAX: (517)336-2758

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Classified Marketplace

AN MAY '93

ANALOG/ASIMOV combination CLASSIFIED AD rate is $8.60 per word—pay able in advance—($129.00 minimum). Capitalized words 60¢ per word additional. To be included in the next issue please send order and remittance to Judy Dorman, DELL MAGAZINES, 380 Lexington Ave., New York, N.Y. 10168-0035.

BOOKS & PERIODICALS

100,000 science fiction and mystery paperbacks, magazines, hardcovers. Free catalogs! Pandora's, Box Z-54, Neche, ND 58265.

FREE CATALOGS of Science Fiction pulps, digests, paperbacks, hardcovers. Collections also purchased. Bowman, Box 167, Carmel, IN 46032.

CATALOGS AND DIRECTORIES

BEST selection of DRAGONS AVAILABLE! Sculptures, T-Shirts, Stationery, Rubber Stamps and Much More. Full color catalog $2.00. Dancing Dragon Designs, Dept. AN, 5670 West End Rd#4, Arcata, CA 95521.

COMPUTERS AND SOFTWARE

Got a computer? Got a modem? Call the Funhouse for FREE Software (804) 442-5867. Analog covers online!

PERSONAL

BEAUTIFUL BRITISH LADIES & ELIGIBLE BRITISH GENTLEMEN seek friendship, romance & marriage with American ladies & gentlemen! All ages! Free details: ENGLISH ROSE INTRODUCTION AGENCY. (Dept. D P). 2nd Floor, Mill Lane House, Mill Lane, Margate, Kent ENGLAND TEL: 01144-843-290735.

GAY CONTACTS! WRITE: MMM INC. P.O. BOX P (A), CONWAY, NEW HAMPSHIRE 03818.

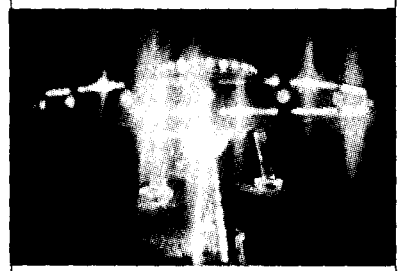
SCIENCE FICTION

SCIENCE FICTION CONNECTION. Nationwide network for unattached Sf fans forming. P.O. Box 726, McLean, VA 22101-0726. (703) 448-1836.

TAPES & CASSETTES

OLDTIME RADIO PROGRAMS. Great Science Fiction! Also, mysteries, comedies, westerns. Free catalogue. Carl D. Froelich, Heritage Farm, New Freedom, Pennsylvania 17349.

THE U F O EXPERIENCE



An Award Winning Video

This video you cannot afford to miss seeing - exciting personal experiences of seven different individuals reveal astounding facts about extraterrestrial intelligence and the real purpose behind the UFO phenomena!

Could it be the Space Brothers will land on Earth in 2001?

$29.95 + $3.50 p/h + CA tax
VHS 52:12 min.

Unarius Productions
145 S. Magnolia Ave.,
El Cajon, CA 92020

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

WHITE

Stephen L. Burns

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ROOM

Penal systems often claim to rehabilitate and seldom do. But could they do even more?

Illustration by Janet Aulisio

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The slamming of a prison door sounds like nothing else in the whole world. It's a harsh, hollow, hopeless sound. There is an air of finality about it that turns the bones as cold as steel bars and the heart into a lump of concrete in the chest.

Billy flinched, even though he was doing his best to be cool. He'd done time in juvey holding and county lockup, but this was different. This was the Big Leagues. *State prison.*

He forced a grin onto his face. You're Bad Billy, he told himself, and as of now you're a Major League Player. But the grin fit his face like a cheap plastic mask, and his steps slowed as the oppressive air of the place wrapped around him. Like another layer of chains added to those he was already wearing.

"Move your butt, pretty boy." The guard was in his late forties and at least a hundred pounds overweight. Wrinkled gray uniform with sweat rings under the arms. Shirt buttons pulled tight across his belly. Mean little piggy eyes behind thick round glasses. He prodded Billy from behind with a pudgy hand. "Your suite's all ready. You wouldn't wanna let the champagne get warm, wouldya?" He snickered and patted Billy's fanny. "Or mebbe you're more the fruit basket type."

"Screw you," Billy muttered, half under his breath, knowing it was a pretty lame comeback. The problem was this place was so *cold.* Not cold like winter, but cold like you didn't mean nothing to it. Like you were nothing but a tiny little cockroach in a giant steel dumpster.

He hunched his shoulders and shuffled faster down the concrete corridor, his chains jingling in time. I *shouldn't be here like this,* he thought bitterly, chained up like some freakin' dog. Wouldn't be either if the lawyer the public defender's office had stuck him with hadn't been a boozy, chain-smoking old bag who spent half her time lighting up a fresh smoke from the butt of her last, and the other half coughing and looking for papers she couldn't find. Stupid old bitch hadn't even been able to keep his name straight, kept calling him Bobby. She'd bargained his charge down from aggravated assault and armed robbery, sure, but getting him two years hardly seemed like a favor.

The corridor ended in a solid steel door that looked like it could stop a bulldozer.

"Wait up, Cinderella," the guard drawled, grabbing him by the back of the white coverall he'd been issued. The guard glanced at the clipboard he carried, then raised his voice. "Genovese here with a new deb. William F. Thomas, prisoner number 3154–822985." He flipped up a sheet, made a clucking noise with his tongue. "Got us a real tough guy here." He eyed Billy like something smeared on a toilet seat. "He beat up two women while knocking over a liquor store."

Billy bit his tongue, his face sullen. The lard-ass guard was right about what he had done, but it wasn't like he made it sound.

"Clear," came a bored, scratchy voice from the speaker grille next to the door. The heavy door rumbled to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

one side, opening on a short dead-end corridor. One side was nothing but blank wall, the other lined with white doors without any handles or windows. The walls of the corridor were white, as were the floor and ceiling, and it was so brightly lit that Billy had to squint against the glare. There was not a single person in sight. No guards. No prisoners. The corridor was eerily silent. Like a tomb.

The guard gave him a push. "Move your buns, blondie. I was s'posed to go on break five minutes ago, and if I don't get coffee and a smoke soon I'm gonna get reeeal cranky."

Billy stood by his cell door, absently rubbing his wrists to get rid of the feel of handcuffs. He looked around at the cell, unsure if he should be unnerved or relieved.

His cell wasn't anything like what he'd expected.

It was maybe ten by ten, the concrete block walls painted the same glaring white as the corridor outside. The floor was white. So was the ceiling. There weren't any windows, not even in the door. That was just a featureless white slab.

To his left was a single bunk, no more than a narrow white-painted steel platform. On it was a thin mattress, a foam pillow, and a flannel blanket—all white.

In the corner on his right was a small cantilevered table and a white plastic chair. At the far corner a three foot square section of the floor was a couple inches lower than the rest. That area was home to a toilet and a soup-bowl sized sink with a small steel mirror over it. A showerhead protruded from the wall in the very corner, and a drain was set in the center of the sunken floor. A towel and a washcloth—both white—hung from a hook attached to the short wing wall between the shower corner and the rest of the end wall of his cell.

There was some sort of small door set in the wall just below eye level just to the left of the wing wall, but Billy didn't give it a second look.

There was something else far more interesting to look at. First because it was black, instead of white, and because Billy was very much a child of his times. It appeared to be a large screen TV built into the left-hand side of the cell's end wall. He went to check it out.

"Far out," he said, the close white walls of the cell giving his voice a hollow ring. "They're gonna make me do two years watching Wheel of Fortune."

The TV's controls were a flat black touchpad, like on a microwave. He turned it on. A picture of a nesting bird appeared. Since it wasn't shot, eaten, blown up, or run over within ten seconds he figured it was some sort of boring nature program.

"Public TV," he sneered, reaching up to change the channel. "Wonder if I get ESPN or HBO?"

As it turned out he was stuck with that one station or nothing at all. So he sprawled on his bunk, locked his hands behind his head and got comfortable for tubing out.

All I need now is a beer, he thought with a smug grin. If the worst prison

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

was going to do to him was make him watch egghead TV, doing his time would be a cinch.

"*Time to get up*," blared the metallic voice as the lights in Billy's cell brightened to their usual harsh glare.

Billy sat up on his bunk, swinging his bare legs over the side. His blond hair stuck up in every direction, and his blue eyes were muddy and dull. He stood up, shuffled to the TV and turned it on. The screen lit, rewarding him with the familiar opening sequence and song of Sesame Street.

Stifling a yawn, he went to take a leak. After washing his hands he went to stand in front of the small door in the cell's end wall between the shower and TV. He had ignored the door at first, but soon learned its importance.

He was humming along with the Alphabet Song when he heard the clunking sound he had been waiting for. The small white door slid up, revealing a compartment about the size of a breadbox. Inside was a white rechargeable razor, which he took to the mirror over the sink and put to use. It didn't take him long to shave the sparse stubble from his cheeks, and when he was done he returned the razor to the cabinet. The door slid shut. A minute or two later it opened again, this time on his breakfast.

Billy ate in front of the TV, seated on the end of his bunk with the cardboard tray balanced on his bare knees. Breakfast was the same exact thing it had been for the twenty-seven days he'd been in the cell. A paper cup of coffee and a smaller cup of juice. A paper bowl of scrambled eggs and two slices of buttered toast. He ate mechanically, eyes glued to the screen.

Each of those identical breakfasts marked another day in which he had not seen another human face—other than the ones on television. At first he had been relieved that he'd been given a cell by himself. He hated to admit it, but he'd heard enough stories about prison to be worried about getting stuck in a cell with some humongous mass murderer who'd want to turn him into his girlfriend.

In those fleeting moments when he could peel his brain off the tube long enough to think straight he wasn't so sure this was better. He ate by himself and showered by himself. His food, and clean clothing and bedding came by way of the box in the wall.

Every day at four an exercise program came on the TV. At first he'd hooted at the sour-faced no neck who led the exercises. After the third day he realized that it was just a single tape that repeated every day at the same time. "Grunting With Gunther," he called it, and he'd have to be pretty desperate to play along.

Now he waited, already stripped to his shorts, for four each day.

There seemed to be no escape from the white walled solitude. He didn't even get to see a human guard. Anything he asked for and all he was told came by way of the inhuman sounding metallic voice. About day four he had demanded to see his lawyer. The voice had replied that his appeal had been denied and his law-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

yer taken off the case. He had asked if he was going to get to see any visitors. He had been coldly informed that no one wanted to see him, not even his mother.

Billy finished his breakfast. The whole rest of the day stretched out before him like a narrow tunnel. White. Empty. Unvarying. Lunch at noon. Grunting with Gunther at four, a shower and fresh coverall at five. Supper at six. Lights out at eleven. Lights on at seven, and do it all over again.

Cookie Monster appeared on the screen. Billy giggled.

"*Time to get dressed,*" said the robotic voice that was the architect of his days.

Billy obeyed without a second thought.

Billy frowned when the sound portion of the program he was watching suddenly cut off. The show was about ants. They were pretty interesting little buggers when you got right down to it.

"*Prisoner 3154–822985,*" blared the metallic voice, "*Attention. Respond.*"

"Why'd you shut the sound off, Darth?" Billy whined. He'd started calling the voice that a week or so before, naming it after the Star Wars villain because they sounded kind of alike. He'd given up trying to guess if the voice was human or not, but naming the voice made it somebody rather than something.

"*You have been incarcerated for exactly thirty days. Because of your good behavior you are being granted the option of signing up for a special program.*"

Good behavior? Billy thought in confusion. When've I had a chance to y'know, be bad?

"*Do you wish to sign up for this program?*"

"What program?" He glanced back at the TV screen to keep track of the ants. Wouldn't want to miss something.

"*A social activities program.*"

Billy's frown returned. Social activities? Did that mean he might finally get a chance to talk to somebody other than himself? Still he'd better be careful, he thought, a guardedly sly look creeping onto his face. "What kinda social activities?"

"*Meaningful.*"

Which didn't mean squat. "What would I have to do?" Not that anything different wouldn't be a treat at this point.

"*Accept this offer or say no.*"

"That's not what I meant! C'mon, Darth! What's the program, y'know, involve?"

"*Yourself in a meaningful social activity. Do you accept?*"

Billy made a few more half-hearted tries to get more details out of Darth, but would have gotten farther trying to walk through one of the concrete walls of his cell. In the end he said yes. He was so bored and lonesome that even ballroom dancing with sex offenders would seem like a night on the town.

Nothing happened. The next few days went on exactly like the ones before. Get up. Shave. Eat breakfast in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

front of the tube. Get dressed. Watch the tube. Eat lunch in front of the tube. Watch the tube all afternoon and exercise in front of it at four. Shower and clean clothes at five. Dinner in front of the tube at six. Watch the tube until lights out.

Darth had told him that he was allowed to have textbooks and educational materials if he wished. Billy hadn't been much of a reader in school—he'd always said he'd rather get caught with his dick in his hand than a book—and once he'd been expelled he'd stopped altogether. Now that there was no one to see him and nothing else to do he occasionally had a hazy notion to ask for something to read, but it was easier to watch TV.

There were moments when he thought the monotonous repetition would drive him so crazy he'd start beating his head against the wall just to do and feel something new. There were other times when even the slightest deviation from routine filled him with a nameless terror.

He drifted through the dead-end days in his dead-end room in a dead-end corridor in a dead-end called prison, like a glassy-eyed zombie. Sometimes he curled up in a little ball on his bunk after lights out and cried, dimly wondering what was happening to him, but that was happening less and less as he sank into slack-jawed apathy.

Then on the forty-third day everything changed.

It happened right after supper. The five day supper cycle had brought it around to tuna casserole, green beans, a buttered roll, and apple pie for dessert. The day before it had been hamburger steak with baked potato and gravy, creamed corn, whole wheat bread, and peach cobbler for dessert. Tomorrow it would be chicken and biscuits, spinach, applesauce, and lemon cake for dessert just as sure as the Sun rose—

—somewhere. Billy hadn't seen the Sun for so long that he would have traded his dessert for a single peek at it, and apple pie was his favorite.

He was sitting there, shoulders slumped and face blank, watching a program on bats when both picture and sound vanished. His face clouded over. They were about to show how bats mated! He was about to yell for Darth when a face appeared on his TV screen. Not a pretty face, either.

Replacing the bats was a middle-aged woman, maybe in her early forties. Deep crow's-feet were carved into the corners of her bloodshot brown eyes. Her face was long and plain, faintly horsey. Her hair was a dull brown, limp and lifeless.

Billy stared at her disinterestedly. Although she was not exactly a looker, she could have passed for OK in a mousey, no-other-woman-left-in-the-bar-at-closing-time sort of way. Her kind were easy to pick up, and so grateful for attention they would do anything to please.

But whatever physical charms she might have possessed were spoiled. Both her eyes were blackened, one swollen half-shut. Her cheeks were cut and bruised. A strip of adhesive tape covered the bridge of her nose.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Her lower lip was all puffed up and badly split. Three spiderlike stitches held it together. Five more were half-hidden by one eyebrow.

She looked frightened. She looked confused.

She looked like she was looking right at Billy. "C–can you help m–me?" she stammered.

Billy stared at the screen blankly, still trying to figure out what kind of show this was.

The woman swallowed hard. "Please . . ." Billy noticed the livid bruises on her neck. It looked like someone had grabbed her by the throat. If only they'd grab her again, get her off the TV and bring back the *bats!*

She licked her lips, wincing as her tongue touched the ragged split. "Th–they told me to call this number. That s–someone would see me and talk to me."

Still Billy only stared at her, trying to figure out how this fit into the narrow concrete walls of his personal reality. It really looked like she was looking at him. Talking at him.

The woman sniffed and hung her head. It looked like she was about to cry. "I guess I made a mistake," she said in a low, hopeless voice. "I guess I've got to face this alone. . . ."

It was the word *alone* that finally penetrated Billy's foggy brain. She made that word sound like it was made of cinderblock and iron, as if it were a small white cell with no way out.

"Wait," he croaked, blinking as if waking from a long uneasy sleep, and really looking at the woman. He cleared his throat and spoke again. Louder this time.

"Wait! Don't go!" He didn't know how it was that she was talking to him through the TV, he just knew he didn't want her to hang up or whatever the hell she was about to do.

"I'm here," he told her. "I can hear you, can see you."

"Thank god," she sighed. "I thought I'd go crazy if I didn't get to talk to someone.

You and me both, Billy thought, sitting up straighter and caught between laughing and crying at how good it felt to hear another human voice. "My name's Billy. You can talk to me."

Billy was sprawled across his bunk. The tube was still on. Something about china. The stuff you ate off, not the country. Normally he would have hung on every word, no matter how little it meant to him. But he had the sound turned down to a low murmur, and stared at the white ceiling above him instead of the screen.

The woman's name was Jean.

She was forty-three, single, and worked as a receptionist and secretary for a big insurance company.

Her face was all messed up because two men had jumped her when she got out of her car in a supermarket parking lot. They had beaten her up, taken the sixty dollars cash she had on her, her jewelry and credit cards, and would have probably gone on to rape and kill her if an off-duty policeman out walking his dog hadn't come along and frightened them away.

Some sort of crime victims' assis-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tance agency had given her a videotelephone and a number to call if she needed someone to talk to. Videophones were still pretty rare and expensive. He'd stolen a couple, gotten good bucks for them too.

She had ended up talking to him.

Him. It hadn't taken him long to decide not to tell her who he was, where he was, or why.

How the hell had she ended up on his TV? Was this some sort of game the prison was running on him? Some sort of trick?

Then he remembered being asked if he wanted to take part in some—what had Darth called it?—meaningful social activity. Was this it? There was only one way to find out.

"Darth? Are you there?"

"*I hear you.*"

"Did you—did the prison—fix it so that woman called me?" He didn't figure he needed to explain. Darth seemed to know everything.

"*Does it matter?*"

The question caught him off guard. Before he could even begin figuring out how to answer Darth's voice filled the cell again.

"*Do you wish me to block the call if she tries to contact you again?*"

Billy freaked, pure and simple. "Don't you dare, you—!" he screamed, coming up off his bunk like it had turned white hot under him. As he drew a rattling breath he realized that he was shaking his fist and screaming obscenities at the ceiling.

He let the breath back out as a sigh, his shoulders slumping and his hand falling. "Please don't," he said hoarsely. It shouldn't matter so much, she was just some beat up broad old enough to be his mother, but the thought of not being able to talk to her again filled him with a nameless terror.

"I'm sorry," he added meekly. "Please don't stop her from talking to me."

"*You are sure?*"

"Yeah, I am. She, uh, y'know needs someone right now." He shrugged. "It's not like I've got nothing better to do."

"*Very well.*" There was that hollow click that meant Darth was done talking.

Billy slumped back onto his bunk with a sigh. He shouldn't have let himself get so worked up. It wasn't even like he'd get to screw her or anything, it was just . . .

He rolled over to face the wall, hugging himself and drawing up his knees. He hoped she'd call back soon.

It wasn't fair! Just thinking about it pissed Billy off so much that it had him pacing and muttering to himself. Since there wasn't anything to break or anyone to scream at, that seemed to be his only outlet. The TV muttered to itself. He ignored it.

He'd just talked to Jean again. It had been five days since her first call, and she'd called at least twice every day since. This had been a bad one. She had gone back to work today.

They had talked about it for hours in the days before. Jean was afraid. Afraid to leave her house. Afraid to walk the streets. Afraid to go back to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

her job.

He had tried to convince her that she could do it. That nothing had really changed. That she was still the same person she'd been before the attack. After all, she'd gone to work and out shopping and all of that kind of stuff for years without a problem. Her attack was just something that had happened, like lightning striking.

But in the end it was Jean who made him see that everything *had* changed for her. He'd slowly come to understand that what had really been stolen from her in that parking lot was her confidence. How could she believe that she could take care of herself when she couldn't forget how she had let herself be knocked around, let the rings be torn from her fingers, would probably have let herself be raped and maybe even killed if that cop hadn't come along? The world had been turned into a hostile and uncertain place. The next person she met on the street or in an elevator—*anywhere*—could be the one who finished up what those other two had begun. All she had to do was look in the mirror to see how well she could protect herself.

But in the end Billy had been able to convince her that she should go back to work. That the only way to glue her life back together again was to start by picking up the pieces.

Hunting for some way to bring her around, he'd told her about how his father had been killed when he was fourteen, hit head-on by a drunk driver while on his way to pick Billy up from a friend's house. How he had hidden out in his room for days, sure that he had killed his dad. That his having friends killed him. That his not being home killed him. How he had come out only when his mother forced him to, and how although things were never the same as they were before, they didn't start getting at all better until he picked himself up from where everything had fallen apart.

He hadn't told her how everything went downhill soon after. The fights with his mother and teachers. The cutting classes. The drinking and drugs. The fights. The shoplifting. The things he had done to try to fill the gaping hole inside himself, to dull the feelings of helplessness and worthlessness and rage.

Jean had called just an hour ago, so freaked out that at first he was afraid she had been attacked again.

In a way she had been, but more subtly. It had taken him a while to get her calmed down enough to talk coherently, but he got the whole story out of her at last.

When she went back to work they wouldn't let her have her desk back. They kept telling her to go home. That she should take a few more days off, take all the time she wanted, no hurry.

Jean cried when she talked about the horror she had seen in their eyes when they looked at her. She was never pretty, but now she was ugly. Who could blame them for not wanting her out where the public could see her?

And there was something else. Something worse. They looked at her differently. Treated her differently.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Like maybe she was the criminal. Like what had happened to her had to be her fault, because if it could happen to her for no reason then maybe it could happen to them. Like she had some sort of disease, and if they got too close they might catch it too. All they had wanted to do was get her out of there, and in the end that had been all she wanted, too.

Billy paced restlessly. What a mess. He was in way over his head. What the hell could he tell her?

He'd done his best to get her to believe that she wasn't ugly, that she shouldn't blame herself for the way they had treated her. While he didn't think she was really convinced, at least he had gotten her calmed down and to stop talking like she was thinking about killing herself.

She needed help, and he needed help if he was going to be able to help her. But where was he going to get it?

Then something he half-heard on the TV penetrated his funk.

Billy's pacing faltered and he turned to stare at the tube. They were saying if you wanted to know more . . .

"Darth?" he called. "Can you hear me?"

"*Yes, I hear you.*"

"You said I could get books if I wanted them. Could I get anything on, um, like what to say to people like Jean? On how to help them, y'know, get back to normal?" They had books on everything else, so it only stood to reason there would be some on this.

"*Yes you can. Would you like some?*"

"Please." It had been a long time since he'd hit the books for anything, and he hoped he was up to it. Usually reading just put him to sleep. He wondered if—

What the hell. "And Darth? Could I please have a cup of coffee, too?" He'd never asked Darth for a favor before, but it wasn't like he was asking for a file or hacksaw.

"*The books and coffee will be in your box in about five minutes.*"

The books were a help, except on one thing in particular.

Jean kept asking who he was—was he a counselor, or what? Couldn't she see him in person? Why wouldn't he tell her much more than his name?

He'd managed to sidestep her questions so far, but had a sinking feeling that sooner or later she'd back him into a corner. Once she found out that he was in prison and what he was in for she'd dump him like a sack of garbage.

Every time he thought about that happening he got this sick feeling in the pit of his stomach. He kept telling himself that he just couldn't stand the thought of going back to the lonesome tedium of before she'd brought him some tiny measure of escape.

But sometimes as he lay there on his bunk after lights out other reasons came to him. With them came feelings that had him curling his body into a tight ball and hiding his face in the pillow.

Jean's face had healed considerably in the nine days Billy had known her. Her black eyes had faded to a pale

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

yellow, as had some of her other bruises. She had even started wearing makeup again.

At the moment her eye makeup was running down her cheeks. Because she was crying.

Billy hated it when she cried.

At first it had made him angry. After all, what did she have to cry about? She was free, wasn't she? She had choices and chances he wouldn't have for almost two whole years.

The more he talked to her, the more he understood the source of her tears, the more his anger turned toward her situation. She didn't deserve to have her life frigged up this way. He had learned several new words from the two books he had slowly, painfully waded through so far. *Ego* was one of them. He now understood that hers had taken an even worse beating than her face. That her sense of self and self-worth had been beaten to a pulp, and you couldn't stitch them up or cover them with a Band-Aid and expect them to automatically get better.

Billy's anger still remained. Lately it had begun swinging like a compass needle toward the miserable bastards who had put her in this position in the first place. If the world was at all fair then they would be, well, in *prison.*

That, though, was a mind-blower for sure. He hadn't got it anywhere near straight in his head, and there was no time to think about it now.

Jean was in the middle of another bout of depression. She'd started blaming herself again for being so weak and worthless that she became a victim, and condemning herself for not being able to get over having been one.

"Listen to me, Jean." He stared hard at her image on the screen, wishing he could pat her on the head or even hand her a Kleenex. Her head was bowed, and all he could see of her face now was her chin. "Are you listening?"

She nodded. "Uh huh."

"None of this is your fault. The only ones to blame are the shitheads who did this to you. You didn't ask them to mug you, and they didn't choose you, y'know, personally. You . . . you weren't even a person to them. They didn't look at you and say to themselves 'she wants this.' They never once thought about who you were or how awful it would be for you. You were just an easy target. A source of some money, and maybe some fun."

Jean peered up at him. He could see how desperately she wanted to believe him. "How can you know that for sure?" she asked in a small voice.

"I—I just know their kind," he answered evasively.

She wiped away a tear, leaving a black streak of mascara. "Did something like what happened to me happen to you?"

"No." He had to change the subject. "Now—"

But Jean wouldn't let it go. "Then how can I know you aren't just telling me something to make me feel better? That's probably your job, right? That's what counselors do."

He shook his head. "I'm not a counselor."

"Then what *are* you? A cop? A

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

priest? Social worker? *What?*"

"Nothing like that. I just know what I'm talking about here, that's all," he said plaintively. "Can't you just trust me?"

Jean's face had gone tight and angry. "How the hell can I when you won't give me a straight answer to a simple question?" she demanded.

Billy could only shake his head from side to side like a groggy boxer backed into a corner. "I can't . . . I just can't tell you."

"But I've told you *everything!*" she shuddered. "God, I've stripped myself naked for you, told you things that made me so ashamed—"

"That's why I can't tell you!" Billy cried, seizing on that one word she used like an exit from the steel box closing around him. "Because I'm too *ashamed!*" And it was true. That word wrapped itself around one of the terrible inner pressures he'd been trying to suppress, and now that it was named there was no hiding from it.

"You don't trust me," Jean shot back accusingly, her anger fragmenting into despair. Her face fell. "I'm just some spineless middle-aged loser not smart or strong enough to take care of herself. Maybe you say it wasn't personal because for you it isn't. You just want to get me patched up, close my case, and not have to put up with me any longer."

Billy couldn't take it any longer. He felt like he was about to explode.

"No, dammit," he growled. "That's not true. I've told you a hundred times I'm not some frigging counselor." He drew a shuddering breath. "You really want to know what I am?"

He never gave her a chance to answer. His voice dropped to a harsh whisper. "My name is William F. Thomas, prisoner number 3154–822985 at the Covelton Correctional Facility. I'm serving a two-year sentence for robbery and assault. I know exactly what those two men who mugged you were like because I'm just like them."

Jean stared at him in shocked disbelief. "Y–you can't be," she stammered. "You're not—"

There was no stopping now. It all came pouring out like pus from a lanced boil. "I *am.* I called myself Bad Billy—like Billy the Kid, right? Big outlaw. I got myself kicked out of school at sixteen for hitting a teacher who caught me ripping off lockers. I got a job at a garage, got canned for stealing. I've stolen cars, broken into houses and stores, had a pretty good sideline selling coke and speed. A guy I hung out with and fenced stuff to—a real pro who'd been sent up twice for armed robbery—kept calling me a pussy 'cause I only did grab and run.

"One night when I got all coked up I decided to kill two birds with one stone. I needed cash for a speed buy, and I decided to show him what kind of balls I had while I was getting it. So I held up a liquor store. There was an old lady behind the counter. She wouldn't open the register so I knocked the shit out of her. While I was grabbing the cash another woman came in. Her boyfriend was coming over for dinner and she wanted a bottle of wine. Instead she ended up getting a dislocated jaw, four broken teeth, a concussion, and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a night in the hospital."

Billy's voice dropped even lower. "It wasn't *personal*. They were just, y'know, in my way. It was like I was screamin' down the highway at seventy and they was nothin' more than two rabbits unlucky enough to be in front of me. I ran 'em down without even thinking about it."

Billy sighed and stared at his hands, remembering how he had used them that night, and realizing that if he'd had a gun with him he would have used it just as thoughtlessly. That realization was so chilling he had to hug himself.

"Billy?"

"Yeah?" Now she would scream at him, tell him what a monster he was. He wouldn't be yelling back. All his anger was gone.

"Are you—are you sorry for what you did?"

All of a sudden he was crying. It just came over him and he was helpless to stop it. "Yes," he managed to gasp, "Oh Jesus yes . . . "

"Because you got caught and it landed you in prison?"

He shook his head, unable to look at her. "No, it's—" He groped for a way to explain. "It's like those women . . . they could be *you*. You could be one of them." He gestured helplessly. "You, you're what I did to them."

"I see." There was a long uncomfortable silence. Billy waited it out, hunched around his misery and counting the seconds until she kissed him off for good. Who could blame her for hating him? He hated himself.

"Billy?" she said at last. "Will you look at me?"

He did as she asked, bracing himself for the hatred and revulsion he would see on her face.

Instead she gave him a wan smile that made the breath catch at the back of his throat. Something like hope sputtered and lit weakly inside him.

"I think we should keep talking to each other," she said gently. "Only—"

Billy wiped his eyes on his sleeves. "Only what?" Anything she wanted, he'd do it.

"Only now we should both talk. About everything. Maybe try to help each other."

He nodded. "I'd like that." He came up with something like a smile. "You've already helped me a lot."

Billy was pacing again. What he had just gone through with Jean had left him feeling wiped out, as if he'd just climbed out of a pit a hundred miles deep. But he had this nagging feeling that there was something he should do. Something important. Something to do with something he'd said to Jean. . . .

Then he had it. Jean could have been one of the women he'd hurt. And those women could be Jean—or at least in the same shape. Thanks to him.

"Darth?"

"*I hear you.*"

"Could I please have a pen and some paper?"

"*Why?*"

"I want to write to the women who were in that liquor store I robbed. I

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

want to, y'know, say I'm sorry. To tell 'em that if they're blaming themselves even the least little bit, they should stop 'cause the only one to blame is me."

"*Pen and paper will be in your box shortly.*" There was a pause several seconds long. "*Would you like some coffee to drink while you write?*"

Billy grinned up at the ceiling. "Thanks, Darth. That'd be great."

"Well," said the rumpled, overweight man named Genovese as he began filling a white paper cup from the coffee maker. "What do you think?" The guard's uniform he had worn when he had taken Billy to his cell hung from a hook on the wall. Now he wore a dark turtleneck and baggy jeans, both of which looked like they had been slept in. So did the cot in the back corner of the equipment-filled room.

There were two other men in the room with him. Darren Samuelson was from the governor's office. He swiveled his chair away from one of the several monitors, his long narrow face professionally neutral. "Not bad. But just because you can make one young thug—"

"Not just one, Darren," put in Warden Fisk, a wiry, waspish black man with a shaven head and gold wire-rims. He was as impeccably dressed as Genovese was slovenly, his manner crisp as the creases in the pants of his tailored suit. "Billy is the fifteenth subject we've put through Geno's program. Two are still in process." He indicated two other monitors. "We can show you the tapes on the rest. We just showed you Billy because you arrived at the right time to see his breakthrough."

"OK, it was fairly impressive," Samuelson admitted grudgingly. "How many failures out of the fifteen?"

"None." Fisk held up his hand to forestall argument. "I'll grant you that we've been picking the subjects quite carefully. They have all been fairly young, all repeat offenders but none of them real hardcase incorrigibles." He crossed his arms. "You saw Billy's sheet. You tell me what he would have been like after two years—or even two months—of hard time."

"All right, I know the statistics as well as you do," Samuelson said tiredly. "But why should I consider this punk rehabilitated?"

"He isn't, yet," Genovese said diffidently as he put pen, paper, and coffee inside one of the three small cupboards spaced along one wall. When he closed the inside door it opened from the front. "But now he can be. He's a lot less likely to go back to crime when he gets out because now he's begun to identify with his victims instead of other criminals."

"Like hostages sometimes start identifying with their captors?" Samuelson asked.

"Sort of, but not exactly," Genovese answered, not looking at Samuelson directly. He lit a cigarette, ignoring the NO SMOKING sign. The number of overflowing ashtrays scattered around the room said that he'd been ignoring it for quite some time.

"What's important is that he now understands the consequences of his acts. Not in terms of punishment, but

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

in terms of the pain he causes someone who doesn't deserve it."

"This could be an end to the revolving door," Fisk said. He arched an eyebrow. "Wouldn't that be something?" He watched Genovese move restlessly through the room, checking monitors, and then the small mainframe set up along the wall. Genovese had spent most of the past five months in this room. If this meeting was a success he vowed to take him out for the best dinner money could buy.

Fisk turned his attention back to Samuelson. "When Geno first came to me I almost didn't hear him out. I mean, what would a computer nerd with a couple of degrees in psychology know about dealing with prisoners? But it was a slow day and I read his proposal. It made sense."

He ticked off points on his fingers. "Isolate the prisoner from all human contact—or contamination. Lull him into a receptive state by giving him nothing but a monotonous routine and environment, and nothing but TV for company. Make him so starved for human contact that he will do anything to maintain the first contact he does get, namely the victim of a crime similar to the one he committed."

"I see all that," Samuelson put in. "I understand that he, um, 'imprints' on the victim instead of other prisoners. But the victim isn't human! It's a goddamn computer!"

Genovese looked up. "The prisoner doesn't know that," he said mildly. "The computer matches the subject's personal victim to him. There are carefully made points of congruence in both their histories, but not so many that it smells fishy. The computer's set up as an expert system with only one goal: cracking the subject's defences."

He pointed to one of the three instrument packages on a wall-mounted rack with his cigarette. "It responds not only to verbal cues, but physiological input. We monitor his heart rate, galvanic skin response, and blood pressure. The sensors are in his coverall. His voice is analyzed. If he lies, the computer knows it. If he says he's sorry we not only know if he is, but just how sorry he is."

"What's deaf, dumb, blind, has ten legs and would buy the Brooklyn Bridge if you gave it a chance?" Samuelson said sourly. "A parole board." He turned to stare at Billy's image in the monitor. The young blond prisoner was sitting at the table in his cell, hunched over the paper he had been given, and slowly writing. His face was intent. Behind, Samuelson Genovese and Warden Fish exchanged hopeful glances. The small grant that had gotten the program started was all but gone. Samuelson could renew it, give them funding to expand the program, or torpedo them.

The man from the governor's office faced them once more. His face gave nothing away. "What happens to the kid now?"

Warden Fisk answered. "We have a special ward set up for the test subjects. We'll transfer him there in another few days. He'll get to talk to others who've learned the same lessons he has, get counseling, maybe

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

get some schooling or start learning a trade. After a while he'll even get to have visitors."

Samuelson frowned. "Won't he smell a rat when he talks to the other subjects?"

"Why should he?" Fisk shot back. "Each one has been told that they are part of a special social activities program—and they are. Each of them has met a different 'victim,' and gotten to their breakthrough in a different way."

"All right, but won't the kid want to meet, what's her name? Jean? Want her to visit him?"

Fisk smiled. "Billy will be seeing less and less of Jean after a while, and eventually she won't need him any more."

"But isn't he so, ah, fixated on her that taking her away will cause a problem?"

"No, it shouldn't. Not only will he end up pushing her into trying to make it on her own, he'll have the problems of other victims to deal with. He'll be far too busy to pine over just one of them."

Samuelson looked past Fisk to stare at Genovese. "Other victims? You mean you plan to keep every prisoner pacified with that computer the whole time they're here?"

Genovese's eyes widened in surprise behind his thick lenses. "Why would we do that? The next victim Billy has to deal with will be real." He sighed, butting out his smoke. "God knows there are enough of them, and they can use all the help they can get."

Fisk hammered the point home. "Does the phrase 'repaying your debt to society' ring a bell, Darren? Or how about 'making the punishment fit the crime'?"

Samuelson didn't answer. He swiveled his chair around for one more look at Billy. He watched the boy labor over his letter. He wasn't feeding some slick line to a parole board. He wasn't getting a crash course in violence, buggery, while becoming hard enough to survive in prison. He had to admit that the kid was already a better person than he had been when he was brought in.

The prisons were overcrowded, and a terrible drain on the budget. The present system wasn't working. Maybe one prisoner in a hundred came out better than he went in. He wanted to believe that this could really work. Still . . .

Billy looked up from his letter. "Darth? Can you hear me?"

Genovese went to the microphone, turned the switch to where BILLY had been written on a piece of tape. "*I hear you.*" His voice came back through the monitor sounding alien and strange.

"How do you spell apologize? Is it a–p–a–l–a–g–i–z?"

Genovese, as Darth, spelled it out for him correctly. When he turned back Samuelson was staring at him.

"I still want to see those tapes," he said, "And the ward where you keep the other subjects." He glanced back at Billy's intent face, nodding to himself. "But I think you've got your funding." ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE REFERENCE LIBRARY Tom Easton

The Harvest, Robert Charles Wilson, Bantam, 395 pp., $22.50 hb (ISBN:0-553-09123-9), $11.00 pb (ISBN:0-553-37110-X).
The Multiplex Man, James P. Hogan, Bantam, $20, 359 pp. (ISBN:0-553-08999-4).
Mutagenesis, Helen Collins, TOR, $21.95, 339 pp. (ISBN:0-312-85387-4).
Strange Devices of the Sun and Moon, Lisa Goldstein, TOR, $19.95, 301 pp. (ISBN:0-312-85460-9).
Deus X, Norman Spinrad, Bantam, $3.50, 179 pp. (ISBN:0-553-29677-9).
Dream Protocols, Lee Ballentine, Talisman (Box 321, Beech Grove, IN 46107), 95 pp., $9.95 tp (ISBN:0-9626708-1-2), $40 signed limited (ISBN:0-9626708-2-0).

Robert Charles Wilson's **The Harvest** would have struck me better if it hadn't reminded me of other tales of aliens come to save us from ourselves and lift us into heaven. Wilson tosses in nanotechnology and virtual reality, but his latest novel did not satisfy me nearly as well as have some of his earlier novels (such as *A Bridge of Years*).

Wilson's premise this time is that one day the world acquires a new satellite, an immense pearl-like starship. It says nothing but hovers ominously in the sky. It emits strange octahedral structures that land in the world's major cities. People start coming down with a flu-like illness. There are hints that the aliens are talking with the world's leaders. And then, one night, everyone falls into a deep sleep and dreams a single question: "Do you want to live forever?"

That flu was an invasion of nanotech beasties that can heal almost any damage. They also give you the ability to "remember" anything that anyone with similar inhabitants knows. At the same time, they make a software duplicate of you, and when you are ready to give up the flesh, you will move into the spaceship, or into a duplicate made fresh for Earth's inhabitants. There you can roam a virtual-reality paradise or sleep until the ship comes to another world, when nanotech beasties can make you a fresh body in which to play for awhile.

That sounds quite delightful. The world's masses leap at the offer (I would; wouldn't you?). Armies lay

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

down their arms. Military planes carry food to succor the starving. A new ship begins to form in the American west.

But not everyone leaps at the offer. One in ten thousand resist. Some see the offer as far too democratic, for this paradise is for both saint and sinner. Some cannot let go of their mortality, or of the hierarchy in which they have a place, or of their past, or of their unmodified humanity. Some cannot trust or cannot believe such a good thing could possibly come to such worthless scum as they.

Meet Matt Wheeler, a physician in Buchanan, Oregon. He still grieves for a dead wife and keeps daughter, lover, friends at arm's length. When one of those friends finds nanocritters in blood samples and connects that intimate invasion to both the flu and the aliens, he is terrified. When the dream comes, he turns down the offer of immortality, and when his daughter, lover, and friends do not, he feels very alone.

Meet Beth Porter and Joey Commoner, two young folks who think so little of themselves that they tattoo "worthless" on their skin. Here is Miriam Flett, a little crazed with religion. Here's John Tyler, ex-colonel with fingers in the tills of power and influence, a sadistic psychopath who keeps his impulses under control most of the time. Here's A. W. Murdoch, a military weapons specialist who has lost his home.

These and a few others provide the eyes through which Wilson shows us a changing world. People no longer work for pay but seem focused internally, satisfying needs long unmet, preparing to leave the Earth behind. When they finally do depart, they leave their empty skins blowing on the wind. The aliens, the Travellers, correct the damage humanity has done to the Earth; one result is immense storms. Buchanan is destroyed, and the survivors travel east.

Where are they going? Some, such as Wheeler, want to find other survivors and rebuild a human community. Others, such as Tyler, want to build a pocket kingdom where their every whim is divine command. The others lean this way, that way, wavering, torn between freedom and the need to belong. And they change. Worthless Beth starts learning to be a nurse. Joey proves a whiz at the electronics essential to communication with distant groups; he also finds Tyler's leadership irresistable.

The world grows emptier day by day. Hardly anyone is left but refuseniks, whose own situation grows daily more precarious as the tensions among them rise. Eventually those tensions come to a head in violence and death and a final note of hope.

However, there is a tension here between the personal and the cosmic or divine that is never quite resolved. It is as if the novel were a chess game, which starts with a board full of pieces. There are conflicts that move the game toward its end, and the board loses more and more pieces as the game proceeds. In the end, there are only a very few pieces left, and then a final defeat for one side or the other. Yet Wilson does not really give us sides here. Nor does he give us a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

checkmate, or even a draw. It is as if we are watching battles in a nursery, a sense strengthened when Wilson suggests indulgent parents looking on (I'm being cryptic deliberately; I don't want to spoil your reading).

That sense may be inevitable given the situation he posits. It is thus a sign of the faith Wilson keeps with his material. But I think it also contributes to making the novel less satisfying than it might have been. On the other hand—well, I enjoyed *The Harvest* a great deal. If it is less "satisfying," it is so only in conventional dramatic terms, or because Wilson's more conventional drama is overshadowed so mightily by the backdrop.

It has been a while since I last reviewed one of James P. Hogan's novels. I therefore paid special attention when **Multiplex Man** appeared in my mail, and I can report that even though this technothriller does have some problems, *Analog* readers are likely to enjoy it.

Here's the premise: The United States and Western Europe have gone crazy with "politically correct" and "green." The educational system stresses environmental guilt, groupthink, and obedience to authority. Thinking for oneself is a mortal sin. Regulatory agencies hamstring business and force the citizenry to live in tight quarters, drive miserable econoboxes, and suffer lines and limited choice when shopping (unless, of course, you have money or connections), much as in Eastern Europe before the present day.

In Eastern Europe, the peanut-brittle nations of the old USSR, and Asia, freedom has busted out all over. The laissez-faire free market provides all the regulation the people need. The creative, entrepreneurial spirit dominates the culture. Guilt and cowardice do not restrain. The stores are full, the people smile, and there is a fountaining of humanity into space.

Western propaganda insists that it cannot last. Resources are not infinite. The East must crash, and when it comes crying to the West for help, it won't get it. A strong military is essential to defend against the day when the East gets grabby.

Now meet Richard Jarrow. He's a Minneapolis teacher, totally convinced of the American system's rightness. He's been told there's a little something peculiar in his brain, and he must report to a small clinic for therapy with a mad-scientist, B-movie brain-scanning rig. And then one day he wakes up in a very different body. He's in an Atlanta hotel, there's a briefcase full of guns on the dresser, some woman has left her clothes scattered hither and yon, and his ID says he's now Maurice Gordon. When he runs all aflutter back to Minneapolis, he learns he's dead. His friends even remember the funeral, and just who the hell do you think *you* are, buster?

Well. Gordon had had a few notes in his pockets. One leads Jarrow to Chicago and Rita Chilsen, the woman of the scattered clothes in the hotel room. She recognizes him as Tony Demiro, a soldier who was reported dead after volunteering for a mysterious research program. She says Tony

(continued on page 164)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

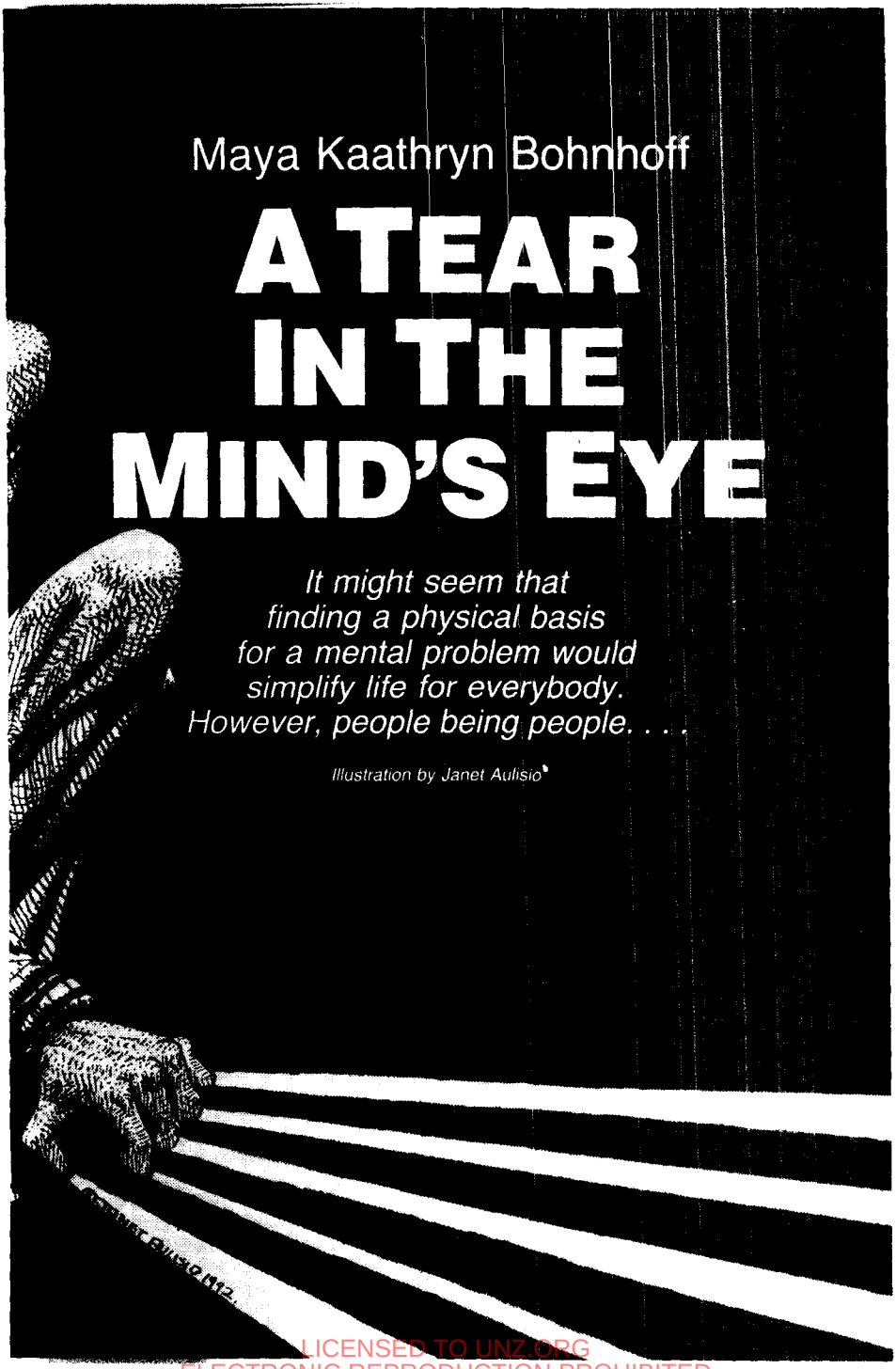
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Maya Kaathryn Bohnhoff

A TEAR IN THE MIND'S EYE

It might seem that finding a physical basis for a mental problem would simplify life for everybody. However, people being people. . . .

Illustration by Janet Aulisio



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

They had cured his diabetes. They could do that these days with their clever balancing-act drugs. And they had corrected his vision with their intelligent nano-surgeons and their organic plastics. But they had not cured his desire to die.

He held it at bay uneasily. Always had. Not without the help of his therapists—a veritable battalion, he sometimes imagined, of psychologists and psychiatrists and neurologists. In his near-sleeping moments, he could see them marching, rank upon rank, a blur of multi-colored faces above white lab coats and smart suits. So many people, he thought. All to keep one insignificant soul from surrendering to depression.

His life recently had centered around the battle to keep from being institutionalized. That, more than anything, had come between him and the urge to overdose on something. Adversity was good for him. The psychologists fancied they kept him limping along with their archaeologist's curiosity about the buried. They dug and they dusted and they put everything they found in boxes with neat labels, and they bit back their frustration and uttered mild, milky words about "making progress." They had been "making progress" for nearly a decade but were no closer to understanding what made Brooke Burchard sink into increasingly viscous bogs of depression.

It must be frustrating for them, he often thought, and wondered how many of them succumbed to their own depression or to ulcers. He wondered how many of them had therapists of their own.

He wondered that anew as he watched his current healer, Dr. Annette Geller, patter away at her notebook, her usually attractive mouth twisted into a peculiar grimace. Computers, Brooke decided, were a bad idea. At least in the past psychiatrists had had their pencil caps or erasers to chew on in moments of professional angst. Now they could only smack at the compact keyboards with staccato strokes. Heaven help them when the new sub-vocal triggering technology became widely available. They'd not even have the keypads to abuse. He thought of Dr. Geller chewing on the plastic cover of her notebook and smiled.

"What?" she asked. "What strikes you as funny?" Her hand poised over the notebook, ready to note it.

Brooke blushed slightly. "Oh, nothing, really, just . . . wondering about the effects of technology on psychology."

Her dark brows rippled. "How so?"

He gestured at her computerized tablet. "My first shrink was a pencil chewer," he said. "I was just wondering how you exorcised your frustrations."

"Exorcised," she repeated, fingers jigging tunelessly over the keypad. "What an interesting way of putting it. What makes you think I have frustrations to exorcise?"

"You're human, aren't you?"

She smiled and nodded. "Very. I

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

swim. I go to a spa every night when I leave here and swim myself into a nice, tired blob of protoplasm."

"Beats gnawing on your machinery, I'll bet."

She looked down at the notebook. "Yes, that it does."

He took a deep breath, exhaled it. "How'm I doing?"

"I think we're making progress," she said.

He smiled again. "Are we really? And where are we headed?"

"Excuse me?"

"Progress implies motion. It also implies a goal. My goal is not to be at war with myself just about every waking moment. How much closer to that goal am I today?"

She crossed her legs and leaned forward in her seat. "What do you think, Mr. Burchard?"

"Brooke—and please don't do that. I've already told you what I think. I told all of your predecessors what I think. I have nothing to gain and everything to lose by not being absolutely honest with you. I think I am a sick man. I hear voices that aren't there. I see things that don't exist. I want to kill myself. My father killed himself. My mother never recovered from the loss. My grandfather killed himself. I don't want to do that to what's left of my family. I want to be . . . unified. Completely and irrevocably unified. I want control of my own thoughts and feelings."

"Meaning that right now, you think someone else has control of them?" Her fingers were at work again.

Stop that. Please stop that. While you're doing that, you can't be listening to me. "No, not someone else. That's not what I meant, just . . . that they're out of control."

"You spoke of exorcism a moment ago. Do you think you might be possessed?"

He sat back in the too-comfortable chair and gave her a long look. "Did I say that?"

"Not in so many words, but—"

"I *didn't* say that." He kept his voice gentle, firm, reasonable. Heaven forbid she should decide he was hiding some cock-eyed belief in ghosts or something.

She tapped at her keypad and eyed the results on the tiny screen. "Do you have hallucinations, Mr. Burchard . . . Brooke?"

"You know I do. You've got my whole file right in front of you. And no, I don't think they're the result of any outside agency. I know I . . . occasionally see the world through a warped window, but I don't think I'm possessed or anything like that."

"Does the idea of possession frighten you very much?"

"No, because I don't believe in it." Calm. That sounded very calm. Maybe she'd respect that. *Come on, doc. Don't go off on some idiotic tangent.*

"What do you believe in, Brooke?" she asked him. "Do you believe in God?"

"Yes."

Her eyes came up from the little computer. "That was a very ready

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

answer."

"I suppose because it's a very ready belief."

She sat back in her chair, uncrossed and recrossed her legs the other way. "Do you ever feel that God is punishing you for something?"

He almost chuckled. "I used to wonder. I used to think, when I had these terrible black moods, blue moods—whatever you want to call them—that I must have unconsciously done something wrong and God was trying to alert me to it."

"Used to?"

"I've grown up. That was twenty years ago."

"Dr. Furillo said you mentioned something to him about a family curse."

Brooke threw his head back and rolled his eyes. "Lordy, Lordy, Lordy! That's the biggest problem with being a mental case, you know? You can't just *say* things like 'normal' people. You don't dare be sarcastic or flip or ironic or just . . . make a joke of something."

"Is that what you were doing? Making a joke of your family curse?"

"My family isn't cursed, Dr. Geller, but we do seem to have more than our share of troubles. I suppose that might seem like a curse to some . . . superstitious individuals. Do *you* think it's a curse, Doctor?" He gazed at her expressionlessly, letting his grey eyes go blank and opaque.

She gazed back, intently. "What might your ancestors have done to deserve such a curse?" she asked in return.

Damn. He knew that look. The "I think we may have something here" look. He shouldn't have joked about a curse, of course, but sometimes he just got so damned tired of the endless, groping questions.

"My grandfather was an ordinary man. He was a diabetic and, in those days, that was a pretty damned tragic thing to be. I suppose he drank too much. I suppose that exacerbated the situation. But he was just an ordinary guy. My father was an ordinary guy, too. Nice. A nice man. A nice man who hated himself for no apparent reason and decided he wasn't worthy of living. But he was just an ordinary man. Like me. Ordinary."

"And self-destructive." She was leaning forward again, intent, like a cat, like an eagle. That was it—she reminded him of an eagle. "Let's talk about the feelings, Brooke. Why do you feel unworthy?"

"I don't know, Dr. Geller. If I knew that, I wouldn't be sitting here now reeling out my insides for your personal inspection."

"My *professional* inspection," she amended. "You sound resentful."

"That's even worse," he mumbled, then pulled himself to his feet. "I'm just frustrated, Doctor. I want, more than anything in the world, just to be ordinary. Plain. Unremarkable in every way. I want to be able to say something—anything—and not have you or some-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

one just like you worry each word ragged." *With your sharp little beak.* "I've been in therapy now for ten years. I've seen four different mental health specialists in that time. And they have all asked me the same set of questions. None of them have presented me with any answers. I have a mental disorder which seems to be hereditary. Unfortunately, neither my grandfather nor my father lived to be studied sufficiently. I realize I make a dandy guinea pig—"

Geller came to her feet. "Mr. Burchard, please. You are not a guinea pig. And as to your condition being hereditary—I really don't think that's verifiable. Given that your grandfather committed suicide when your father was fourteen, it isn't really surprising that your father was affected."

"Ah, I see. The old death-wish theory. My father came unpegged because *his* father killed himself at a critical juncture in his young life. He developed a keen sense of guilt; guilt made him begin to obsess; he developed his own sense of unworthiness and failure and killed himself, in turn, when I was twenty-two. Now I'm a candidate because I didn't make it into Stanford like daddy wanted me to."

"The suicide of a loved one is a traumatic event, Mr. Burchard. The survivors often wonder if something they did or didn't do may have . . . contributed."

"Of course they do. And of course *I* did and my mother did. But in the final analysis, we had no effect one way or another. Dad was too far sunk in his own misery to care about us. That's one of the most frightening things about this . . . disorder, Dr. Geller—it's stronger than love or loyalty."

She was looking at the little notebook screen again. "Your grandfather's business folded just before he died; your father had just been denied a loan that would have put you through college—"

"Excuses. Those so-called 'contributing events' are just excuses. Don't you understand that? I came close to taking my own life three times over the years. Once after my father's funeral, once when my wife lost our first child, the last time when I was passed over for promotion due to my erratic performance at work. And in between those attempts, I contemplated death incessantly. Those weren't reasons, they were *excuses*. Excuses to act on feelings I carry with me constantly. They weren't causes. Hell, you know that! Why'm I telling you?"

Why, indeed, she wondered when he had gone. Why did he even bother to visit her when he so obviously felt he knew more about his problem than she did? *Unfair,* Annette chided herself. *He wants help. He needs help. It isn't his fault he's put four good psychologists on the ropes.*

Annette rubbed her eyes in frustration, then swore as she remembered her eye makeup. She'd wanted this case. Wanted it because she thought she could handle

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

it. Wanted it because she thought it would be a matter of applying her unique intuition to Brooke Burchard's problem and spotting something that no one else had seen, drawing from him a revelation no one else had been able to call out of hiding. She hadn't expected him to be so . . . self-aware. It was disconcerting.

She went over her notes again, pixel by pixel, line by line. *Jesus-Buddha! That question about exorcism! Where the hell did I think I was going with that?*

A moment later, she checked herself. *No, that was a valid question.* After all, he might have been starting to think it was inevitable. Fate, doom or destiny—God's will—any or all of the above. She could not let him fall into that trap. He had to believe he could control it. *Had* to. She thought, absurdly, of a childhood cartoon she'd seen about mentally superior rats—a cartoon that had subtly influenced her choice of careers. There had been a magic amulet with an epigramatic inscription: You can open any door, it said, if you only have the key.

The adult woman believed in that epigram with the same faith the little girl had vested in the amulet it was inscribed upon.

"You look tired."

Annette grinned ruefully and smote her companion on the nose with her menu. It was card-stock parchment, not dataslate, so it left no lasting marks there. "Is that anything to say to your beloved when she's gone out of the way to look gorgeous for you?"

"If you care about your beloved, it is."

She watched him seat himself across from her in the intimate booth and contemplated the pale blond lock of hair that nodded over his forehead. It stood out from its darker fellows like the crest of a wave.

"Well? Care to talk about it?"

"What? Oh—I'm sorry, Elliot. It's just a little melting at both ends of my candle. Nothing serious. No—I don't mean that. It is serious, it's just not . . . *my* problem."

He nodded. "A case. Patient-doctor privilege, then. I'll stand down and merely lecture about emotional distance and attachment, et cetera."

"Please don't. I've heard it all—in my own voice, as it happens. I don't need to hear it in yours. too. I needed to hear that I was beautiful."

"You are beautiful," he said dutifully. "And tired-looking. Maybe we should cut our evening short. The film will still be there on Saturday."

"No, I want to see it tonight. Why do you insist on calling it a film? Movies haven't been on film for years."

"I was trying to differentiate. We access CDs, we listen to CDs, we watch CDs at home . . . film is a nice, venerable term."

"So's 'movie.' "

"Oh, all right, then. The movie will still be there on Saturday. Or

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

we could just wait for it to come out on CD."

She smiled, but lacked the energy to push the expression all the way up to her eyes. "Elly, what's your professional opinion of hereditary mental disease?"

It might have been her imagination that he was suddenly wary, but she didn't think so.

"Why do you ask?"

"Because I'm interested in the answer."

He paused long enough to allow the waiter to get to them. He placed his order, she placed hers, and the waiter hovered a moment before leaving them alone. There was silence in the booth.

"Hereditary mental disorders, Elliot. What do you think?" She put a little steel into her voice. *Don't play secretive scientist with me, boy.*

He shrugged. "I think they're a real possibility."

"But what's the mechanism? How the hell does it get passed on? Is there a gene for insanity?"

His lips compressed. "Would this have anything to do with that case we weren't discussing a minute ago?"

"It might."

"There could be a gene that . . . affects the mental processes. Other diseases are genetic—why not mental ones?"

She shook her head. "No. I don't buy it. If that were the case, the drugs we've been prescribing lo, these many years would be having more of an effect, and psychology and psychiatry less of one."

"I didn't say *all* mental dysfunction was caused by . . . genetic predisposition. Just some. Maybe the kind we see when entire families are dysfunctional."

"That could just as easily be environmental."

He shrugged. "Could be. Doesn't have to be. Imagine, Annette. Imagine being able to treat schizophrenia or manic depression the way we treat MS or Alzheimer's. Repair the cells, 'teach' them to replicate healthy replacements, unkink the DNA—quite a feat. Quite a future."

"If it were that easy," she murmured.

"Not easy," he said. "But simple. Plain. Straightforward. The human mind is a maze—so's the human body, but it's a clinically observable maze. What would you say to that, Annette? What would you say to a physical treatment for mental disorders?"

"We tried that—lithium, anti-depressants. Works in some cases, has devastating results in others."

"Not drugs. Actual repair of aberrant physiological processes."

She laughed. It fell short of her eyes. "Trying to put me out of a job, Dr. Hamlin?"

"Isn't that the point of what we do? Aren't we all trying to put ourselves out of a job?"

This time the rueful smile was complete. "I suppose it is, at the core. You just said a mouthful, Mister Genetics." She raised her water glass and toasted him.

Brooke Burchard called in to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cancel their next appointment —voice mode, only. Annette didn't know whether to be encouraged or worried. She tried to gauge the sound of his voice and found it did not encourage her. He sounded evasive, wary, in a hurry to get off the phone. Trying to draw him out, she asked when he'd like to reschedule. He said he'd call her back.

She used the free hour to go over his case files again and noticed they'd been accessed in the last four hours by another Med-Net node. She was immediately suspicious that he'd jumped to another therapist. The thought was wounding. Burchard was male, older than she was by some fifteen years, and while Hollywood still made bad movies about sex-starved men who developed mental and emotional disorders just to obtain a young, good-looking female "shrink," life did not imitate art. In her brief but successful career, Annette had had more than one male patient quit on her because she did not fit the image of a lady psychologist. She'd even tried wearing a lab coat. It hadn't helped.

Burchard, though . . . no, she couldn't accept that of him. He was intelligent, rational. *Oh, yes—and suicidal.* He was a victim of his own mind—how had he described it?—disunified. Inwardly divided. How rational could he be, under those circumstances?

She was still poring over his files when the phone peeped, calling her to her desk terminal. "Dr. Geller," she said, distracted still, and only just realized that the caller was Elliot Hamlin when he started to speak.

"Hello, Annette, I, um, need to ask a favor of you. A professional favor."

She smiled, relief flowing through her. "Sure. Ask away. Need to borrow a tongue depressor? I'm fresh out."

"This is serious, 'Nette. It's about a patient. I'd like to have you in as a consultant."

She was pleased and let herself glow a little with the pleasure his professional approval brought. "I'd be honored, Dr. Hamlin. If you could just link me to the files, I'll be happy to have a look at them."

He glanced to one side, cleared his throat before looking back at her. "You seem to have them open already. The patient is Brooke Burchard."

"You knew last week, didn't you?" she asked, struggling to keep her voice calm. "You knew when we were pointedly *not* discussing his case that he was going to come in to see you."

"Yes, of course I knew. What was I supposed to do? I couldn't tell you that any more than you could tell me whom you were thinking of when you asked me about hereditary mental disorders. He hadn't agreed to have you consult, then. That happened this morning."

"Your idea, I suppose."

"No, actually, it was his. He says you're fresh. Might bring some in-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sights to the battle. I agree wholeheartedly, of course. We need some gauge of his improvement, if he makes any. You're the individual best qualified to do that."

"Improvement? Aren't you getting ahead of yourself? You don't even have a clue what to look for, do you?"

He nodded. "The Wolfram gene."

"What? Wolfram causes physical disorders—"

"Diabetes and severe vision problems, both of which our Mr. Burchard had as a child." He was excited, the skin over his cheeks flushing rose with pioneer pride. "The research team at Chapel Hill has developed an RNA 'enzyme' to isolate the gene. A beautiful, shiny, new, patented enzyme. They've identified Wolfram's physiological effects—it plays havoc with insulin production and blood sugar assimilation, among other things—and it has a similarly negative effect on the brain's endorphin balance. We don't know *how*, yet, but we can now *test* for Wolfram's. I've already done a panel on Brooke Burchard."

"All right, so you can isolate the gene. Then what? You can't *cure* a genetic defect, can you?"

"We've got an enzyme that can isolate the Wolfram gene. We've got enzymes that help the body break down sucrose. Maybe we can create enzymes to restore the mental balance."

"Are you serious? *Enzymes* to cure depression?"

"If Brooke Burchard's depression and dementia is a consequence of having the Wolfram gene—and his profile is certainly consistent with its presence—then I don't see any reason why we couldn't use enzymes to effect a cure." He grinned suddenly and unabashedly. "What do you think of that, Dr. Geller?"

"I . . . I think it's a fascinating theory. I hope you can prove it," she added, and realized she only half meant it. Her emotional reserve shocked her wordless, draining the blood out of her face.

"You don't look happy at the prospect."

Dear God. She felt his eyes on her, probing. Could he see that horrid, selfish thought, doing a slow neon-fade from the darkness inside her head? *Dear God, what kind of doctor am I?*

"Of course, I'm happy!" she retorted belatedly. "If you can take this from the realm of theory into reality, Brooke Burchard will be a free man."

"This is not just about Brooke Burchard, Annette. It's about his children and his children's children. It's about an estimated 8 percent of the people in this country who've seriously contemplated taking their own lives."

"Yes. Yes, of course. But what about Brooke? When will you know if he has the Wolfram gene?"

"He's already been sampled for genetic material. The report I'm expecting, literally, any moment."

"But they've already cured the diabetes, the loss of visual acuity. Burchard had both taken care of years ago. If the mental disorder has

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a physiological cause, wouldn't the treatment he underwent for those problems have cured that, as well?"

"Why should it have? He wasn't being treated for the results of a genetic disorder—specifically, he wasn't being treated for Wolfram's Syndrome. Bad genes can cause alteration or even absence of critical enzymes. The doctors who treated Brooke weren't looking for bad enzymes; their patient had diabetes. They didn't think they needed to look any further. They treated the symptoms, Annette, not the disease. This was—what—ten, fifteen years ago, remember."

"Treated the symptoms," she murmured. "And that's what you think I've been doing, too—just treating the symptoms?"

He looked suddenly uncomfortable, caught between his colleague, Dr. Geller, and fiancée, Annette. After a moment of juggling the two, he nodded. "A distinct possibility."

"And just how do you propose to treat the disease?"

"There are several procedures being reviewed right now. First, we want to try to balance the endorphins—to affect some measure of mental stability. There are several methods of doing that. Some hold out more hope of permanence and reliability than others. You've heard of chromaffin grafts?" He didn't wait for her to answer. "One method of treatment involves a similar transplant of pineal gland cells—"

"Wait. Wait. That's a treatment for multiple sclerosis."

"Ah! A *successful* treatment for multiple sclerosis. Pineal transplants involve a different set of endorphins. But that's just the beginning." He was glowing again. "I believe the answer is in the enzymes. Follow me, OK? If the Wolfram gene can cause an aberration of sucrase enzymes—enzymes that work at metabolizing sucrose—then why not any other enzyme in the body? If we can only determine *which* enzymes are being affected, Annette—"

"But these aren't proven procedures."

He blinked at her as if she had mumbled to him in an alien tongue. "*The procedures are new, but not* untried. The pineal transplant has been used successfully in other cases of depression and the Chapel Hill enzyme *does* isolate the Wolfram gene. What more do you want? None of your procedures have ever been tested in a laboratory—you went directly to human subjects."

She ignored that. "You're relegating Brooke Burchard to the status of guinea pig! You can't hold out any real hope of improvement to him. You're just going to get his hopes up, get him believing in a simple solution to a complex problem, then leave him high and dry."

"The problem is chemical, Annette. And we could be this close—" He made a pinching gesture.

"This close? Elliot, this man has tried to commit suicide three times! He sees things that aren't there. He hears voices in his head.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He goes from being as rational as you and I—and, I'd swear, more self-aware—to being a raving basket case. He and his wife calmly discuss institutionalizing him. If he comes to believe this sickness of his is written in his *genes* it could literally kill him!"

"I don't follow."

"Fatalism, Elliot. As long as he can look at his disorder in terms of—of finding the key, he may keep *looking* for the key. If you tell him there *is* no key, that there's nothing he can do for himself, that he's helpless, he'll also be hopeless."

He seemed to consider that for a moment. "Hopeless? To be told you're not crazy, that you've just got something wrong with your chemicals?"

"But you're saying that crazy, as you call it, *is* chemicals! Just sort out the chemicals and, voila! —you've effected a cure."

"There's something wrong with that?"

"What if it's not true?"

"What if it is, Annette? What then?"

She waved her hands fiercely, fending off the idea. "Veracity is not the point, Elliot. The point is what effect this is going to have on my patient?"

"*My* patient. He put himself in my hands. You're consulting, yes, and I will hear your opinions, yes, but you're not running the show."

"The *show*, Elliot? Is that what this is? A circus act where the handsome, young doctor in his shining, white lab coat, waves his magic amulet and saves the day?"

"That is not what I meant. Brooke Burchard is a human being. I care about him. I want to see him and the millions of others like him free of this debilitating disease. I'm offering a medical solution, Annette. A solution I *know* is there. That's hardly a magic amulet. And I think it's ironic that a member of your profession should accuse anyone else of mumbo-jumbo."

He might just as easily have slapped her. She almost wished he had. "That was low."

He had the good graces to look ashamed. "Yes, it was—but then so was that crack about my shining white lab coat." He pawed at the clean black and white tiles underfoot with the toe of his shoe. "Was it Clarke who said that any sufficiently advanced technology looks like magic?"

Annette grimaced. "I'm not sure technology is the answer to Brooke Burchard's problem. If you determine the presence of Wolfram's gene, then what? Doesn't that basically manacle him to his sickness?"

"Or does it free him from guilt and self-loathing? If we find Wolfram's, at least he'll know there's nothing wrong with his *head*."

Don't think of a white horse. Brooke grimaced and pulled his mind back to his computer screen. Hard to wait. Hard not to imagine that right this moment (every single moment) the report was downloading to Dr. Hamlin's computer. That all his genetic code was scroll-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ing across another monitor, miles away. He looked at his own screen and wondered if genetic code looked anything like Delta-RPL.

Coffee. He wanted coffee. Badly. Couldn't have any, though. It would only make an anxiety attack more likely and that could roll over into something else.

It had been relatively easy not to think of hospital reports when the office had been full of chatter and purposeful activity. It was after hours now—just—and the Development Room was quiet as a church.

I should go home, he thought. But he didn't want to go. Neither Debbie nor Valerie would be there and somehow an empty house was worse than an empty office. He checked the time again. Twenty minutes. They'd be home in twenty minutes. If he left now and drove very slowly, maybe went around the park, he might only beat them by a minute or two.

He glanced at the phone. It was a simple act—a mere shifting of the eyes and attention—but it brought a stab of unease. Why hadn't Elliot called? He'd said there was progress, that he expected a report from the lab at any time. What if they had the data and it was negative? What if he didn't carry the Wolfram gene? What if he was just another manic-depressive? Would Elliot put off telling him that?

Brooke realized he was worrying his stylus—wrapping its light, slender cord around and around one finger. He dropped the thing and rubbed suddenly sweaty palms on his pants. Ridiculous. Even if Elliot had the data, he'd still have to interpret it, consider the implications, decide on a course of action. It could be a whole day before he called . . . either way.

Brooke shut down his computer and got up. Senseless. Senseless to sit here and fume. He left, carefully laying out his homeward course and shifting his thoughts to wife and child. Better. That was better.

The car garage was dark and eerily quiet, and Brooke felt a creeping unease. The smell of oil rose in eddies from the cool concrete. The sharp sound of his heels slapped back from wall and roof. A frisson shivered up his spine, then down again, and he jumped as a *hum-click!* rolled at him from all sides.

The core-lift opened and three women stepped out, arguing about which of two football teams really deserved to win the divisional playoffs. Their high heels punctuated the dialogue with arrhythmic staccato.

"The Forty-clackity-Niners-clack are def-clack-initely clack-clack superior this-clackity-season."

"But Sac-clack-ramento's-clackity defense-clack has clackity-clack dismantled-clack-"

"Sacramento clack-clack-clack is playing above itself." Clack-click-thunk-thud! The conversation moved into the silver Lexus and became too muted to hear.

Brooke sighed and settled into the front seat of his car. He'd loved football, but it got him so wound

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

up he had nowhere to go but down.

He was surprised at how dark it was outside. Dark and cold. The streets were shiny-wet and reflective, spitting the glare of headlights and street lamps back into the darkness. He felt suddenly and completely separate from the rest of the Universe—gliding through a corridor of grey cotton and black nothing in a silent capsule. The tires hissed delicately on the wet asphalt and sealed his isolation.

Stop it, he told himself, and did for a moment. He peered up through the windshield—misting now—into a creeping 3-D night.

I hate this weather. . . . No, not hate. Hate's too strong a word. Too strong a feeling. . . . Dread? He turned on the windshield wipers.

Headlights sped by—vanguards of other silent, hissing capsules, each bearing its separate occupants. But no, some would hold families, chattering happily on their way to dinner, a show, death.

He shook himself. *Dad died on a day like this.*

His mind skittered sideways and he thought of Debbie and Valerie coming home together from across town. Hurrying to meet him.

A car in the westbound lanes skidded suddenly and shot toward him in a long scream of brakes. He reacted quickly, expertly, automatically, pulling his own car to the right, bumping his front tire up over the curbing. The other car swept by with a wriggle of tail lights, dragged itself straight in a few yards, and passed anonymously on—as did he.

Lucky. That could have been—

Yes. It could have been fatal and it could just as easily have been Deb and Valerie. They have farther to drive.

The adrenaline really hit him, then, forcing its icy fist up through his solar plexus, driving the terrified blood up into his head. His hands shook on the wheel. Rain began to batter the windshield, pitting its chaos against the staid rhythm of the wipers.

I should pull over for a moment.

Oh, but not in this. He could make it home. He could.

The shaking was not subsiding. The hissing lights and rush of outside slid too quickly past his windows. And neon. Neon with its cold glare. Even red neon was cold.

What if Deb and Valerie were killed on their way home? What then? It could be happening now—right now. Now. He had to get home. He had to know.

Bad. It was a bad, heavy, horrid feeling. Like a premonition. Oh, right now—right this very moment, their car skidding out of control into the dark, sudden impact, metal bending, tearing. Sudden. Death was sudden. Home.

Sweating, he put his foot down harder on the accelerator. The car surged forward—it had good acceleration for an electric—and picked up speed, fishtailing only a little on the curve of road that cut, now, through tailored lawns.

The radio. There must be news on, a voice to talk to him, to keep

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

him from talking to himself. He reached for the dash unit.

They're dead.

The voice was audible only inside Brooke's head. It seemed to exit his ears rather than enter into them—a waking-from-a-dream voice. The kind that makes you jump and shiver. He did both. His skin crept.

"Brooke." It was a man's voice, dark as the roadway beyond his headlights. His father's voice. "Brooke, can't you feel it? They're gone. They aren't here anymore."

He reached out frantically with straining senses, not even questioning the voice. Not questioning his credulity. Were they still there? Surely if they'd died he would know it—would feel the loss. Hadn't he felt something when his father died? Hadn't something made him call home and say, "Is everything all right?"

Nothing was all right, but his mother didn't know that. "Yes," she said. "Everything's fine, honey. Just fine."

"Let me talk to dad," he'd said. Dad was in the garage, she'd said and went to get him. But he could no longer be reached.

Anger spitted him. *How does a man do that? How does he kill himself and leave his wife alone to find the body? How does a man get that selfish?*

"Selfish, selfish bastard," he muttered. *And I'm your son, you know. So obsessed with my own dark thoughts and my black moods, you'd think I was the only person in the Universe.*

Guilt mounted his anger and spurred it. *Stupid,* he called himself. *Stupid, selfish bastard. You and all your problems. How does Deb put up with it, year after year? Why does she put up with it?*

"She loves me," he said aloud. "She loves me."

Laughter. He heard it, rolling up from the darkened back seat. He went hot and cold simultaneously; the skin of his face twitched. Someone was there! Someone had hidden in the back of his car and had heard him muttering non sequiturs and had now given himself away.

He could feel it now, a Presence, like a field of static electricity rising from the carpeted floorboards behind him. Like a tingling ball of malevolence. He thought of peeking. He thought of reaching a hand back to feel it. To prove himself wrong, he thought. To prove just how crazy he really was.

He heard the whisper of movement as he rounded a corner; as his unseen passenger coiled to spring. Game over. Serious stuff now. Deadly stuff.

He cranked the wheel over violently, banked against a curb, and rode the brakes to a loud stop. He shoved out of the car, tumbling in wet grass and was soaked by rain and an unseasonal sprinkler system. He lay there for long seconds, waiting. Waiting for God-knows-what. When it didn't happen, he got up and peeked into the back seat. In the pinkish glow of street lamps, he saw nothing. No one.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mind grinding, pulse still shrieking, he shivered his way back into the car, abashed, ashamed, embarrassed. He felt blank, but for that. He *was* blank. *Black hole man.* He tried to laugh and couldn't, though his teeth chattered. He started the car. It whined and hummed along with his adrenaline. Far from being spent, it was building up a fresh charge, swept along on a current peculiar to Brooke Burchard.

His sixth sense stage-whispered that there was danger. That perhaps the malevolence had been in the back of Deborah's car. *Was* in the back of her car. Now. Right this moment.

His foot came down on the accelerator. He wove like a drunk—like a madman. He wound his way home, powered by frantic fantasy. The house came in sight (*Dear God, no car!*), its porch light automatically on in welcome. (*They aren't home*—) He glanced for a second at the clock in the console (*—and they should be home by now!*) before he dragged the car, screeching, into the driveway, hydroplaning, shooting water skyward.

He took the long drive much too fast and when a small white blur danced into his headlights, he wasn't ready for it—had forgotten about it. He slammed on the brakes, skidded, and overshot the place he always stopped. Always. He hit it, the small white blur, caught it in mid-scamper and flung it against the garage door.

The car came to a stop. Brooke sat, still, but not silent. His brain and body shrieked at him in strident voices.

What've you done—what've you done—what've you done?

He stared at the great arcs of light on the garage door, watched the wipers shake long, accusing fingers at him, whispering hatefully. He got out of the car and moved forward into the light to see what he had done.

The kitten was dead. Living things did not twist this way and that like wire dolls. Rain pattered gently on the tiny heap of white fur and bone and red, red blood. It fell into the open blue eyes and gave them tears.

Brooke Burchard sat down in the rain beside the little body, caught in the public glare of his own headlights, and wept.

"You have the Wolfram gene." Elliot Hamlin gripped the high-impact plastic of the guardrail and watched for some sign he'd been heard.

Brooke Burchard lay silently, his head and shoulders elevated, staring at a blank TV screen. He twitched, grimaced, squeezed his eyes shut, shuddered. But that was not a reaction, Elliot knew. That was what he'd been doing for nearly twenty-four hours straight—awake or asleep—reliving the moment, flagellating himself, rubbing his conscience in the memory. That was what Brooke Burchard and people like him did. It was the snowball effect—guilt upon guilt,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

shame upon shame, misery upon misery, until there was only one Exit.

And through no fault of his own, Elliot thought. No karma was at work here, but only a tweaked gene and its obedient flotilla of enzymes, doing what it programmed them to do. But which enzymes?

Elliot took a deep breath, exhaled it. His voice would be warm, calm, cheerful. "Brooke, did you hear me? You have the Wolfram gene. We can begin now. We can . . ." He wanted to say, "We can lick this thing. Control it. We can cure you. We can give you normal guilt, average shame, reasonable misery." He *couldn't* say that, or promise to do it. "We can proceed now." Safe words. "We'll start with the pineal graft. . . ." He stalled. And then, what? Take months, years maybe, to determine what enzymes were being affected by the gene?

He glanced sideways at Annette. Her eyes were on Burchard, professional dispassion overcome by compassion, anxiety. She clutched her dataslate to her chest and met his eyes. Now what?

"She loved that kitten."

Both doctors swiveled their attention back to the hospital bed. Brooke Burchard's eyes were focused now, on them.

"She loves you more," said Annette.

"I don't know what I can say to her."

"Whatever it is, she'll be happy just to hear you say it."

He shook his head. "I put them through so much. So much suffering. . . ."

"They're waiting in the lounge," said Elliot. "You can put an end to their suffering right now. Talk to them."

Brooke licked his lips. They were pale, bluish. He nodded. "Yeah. OK . . . have you told them about the gene?"

"I told your wife."

"Doctor . . ." His eyes squinted as if at sudden pain. "My daughter . . . couldn't she carry the gene too?"

Elliot sucked in air. It wasn't an unexpected question, but somehow he was unprepared, nonetheless. "It's a possibility, Brooke. Although, she's shown no indications of it so far. Her blood sugars are normal, her eyesight, likewise. She seems like a happy child."

Burchard grimaced. "No thanks to me. But she could still develop Type II, couldn't she? She could still become diabetic."

Elliot nodded. "She could. But that's not what you're really worried about, is it?"

He didn't answer. "You can isolate the gene now, right? If she's carrying it. . . ."

"Yes."

Burchard nodded, looking miserable. "I'd like to see them now, please."

Elliot nodded and escorted Annette from the room.

"His daughter." Annette smacked the wall of Elliot's office with the flat of her hand. "I was so busy con-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

centrating on how this would affect Brooke, I forgot about how it would affect his daughter."

"*Could* affect her," corrected Elliot, sliding into his chair. "She may not have inherited the gene."

"And if she has?" Annette felt heat building behind her cheeks, pressure behind her eyes. "What if she *has?*"

Elliot blinked at her. "Then she has."

"Jesus Christ, you can be cold-blooded!"

Elliot leaned back in his chair and closed his eyes. *Too damn long without sleep*, he thought. He was on the verge of saying something regrettable. "Don't shoot the messenger, Annette. I didn't *give* Valerie Burchard that bum gene—*if* she's even got it. I just diagnosed her father. I think you're losing your objectivity."

"To hell with my objectivity!" she snapped. "You're so intent on coming up with a medical coup, you've lost sight of the human reality here."

"Oh? And what is that, Dr. Geller?"

Annette came to sit opposite him, across the desk. "You saw what Brooke went through just to find out he had the gene. The tests, the procedures, the waiting. Now you're saying you want to put Valerie through it, too. She's twelve years old, Elliot. *Twelve!*"

"But she's not a manic-depressive. And she may never be one."

"*May* not. You can't guarantee that. All you can do is raise the specter. Look, little girl, you might be just like your daddy someday. Someday you may hear voices and jump at your own shadow and scare the people you love half to death."

Elliot threw up his hands. "What was I supposed to do, Annette, lie? No, Brooke, your daughter couldn't possibly have that gene; let's not even bother to look. Or maybe you think I should have refused him treatment when he first came to me."

"He came to you?"

"I didn't recruit him. He said he'd been doing some reading about mental disorders and had come across the Wolfram's connection. He came to me and asked if there was any way we could find out if he had the gene."

"And you said, you could, of course."

"It is my field, Annette. What would you have told him?"

"That the connection between Wolfram's and mental disorder *is* not universally accepted. That even if he had the gene, there was no conclusive proof that it was responsible for his depression."

"And that his best option was still psychotherapy?"

"I'm not just trying to save my job, dammit!"

"No? Then what? Why are you resisting the idea that Brooke's problems could be physiological?"

"That's not it at all. That's not what I'm resisting."

He leaned toward her, eyes open

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

now. "Then what, Annette? What *are* you resisting?"

"Nothing," she'd said. "I'm not resisting anything. I'm just cautious."

She fooled no one with that dodge, least of all Elliot. No, least of all herself. And so the question, like Brooke's eyes, like Valerie's stricken face, like Deborah's fraying determination, came back to haunt her.

What am I resisting? Change?

She mouthed a tuna salad sandwich and pondered that. It wasn't impossible, she supposed. There were those, she knew, who treated the theories of behavioral psychology as if they were a body of religious law. Law that somehow was at variance with technology. She wasn't one of them. Or at least she hadn't thought she was.

She sipped coffee and meditated on the steam, imagining herself a sylph buoyed upward in its draft. Was she a secret devotee of the status quo? Or was she just afraid of being put out of work by a rapidly expanding technology?

She grimaced. Stupid. The whole point of psychiatry was to help people control their impulses—control their selves. Graduation day, for Annette Geller, was a day any patient stood up, looked her straight in the eye, and said, "I don't need you anymore."

She tossed the coffee cup into the WASH bin and wandered out into a dazzling, dew-spackled day. She stood in front of the cafeteria in a herringbone tweed of sunny, red brick, and stared up between immense cedars.

I am afraid, she admitted. There. Now. She took a deep breath. Afraid of what? The cedars declined to respond. She looked past them. "You," she said to a fleeting patch of azure framed by silver billows. "You, he believes in. Me? Why should he believe in me?"

There, but for the grace of God/Goddess go I.

Patient/doctor trust. Was that at issue? Did she feel distrusted? Yes. Yes, she did. And she reacted. Humanly. And protested out of hurt?

No. But I protest without conviction.

She began a slow walk back toward her office across campus. She had no real conviction, she realized. Nothing but a strong desire to prove that Brooke Burchard's disease was psychogenic, not physiological. She dug for the root of the desire, but it eluded her.

Probably, she thought, *because I want it to.*

"Physician, heal thyself," she muttered and scurried for cover as rain began to fall.

"Your husband has explained the situation to you?" Annette watched Deborah Burchard's face carefully, for what she wasn't quite certain. It was a composed face. Yes, that was what Deborah Burchard had—composure. Annette supposed one developed composure after fifteen years with a man like Brooke. One did that or one left.

Deborah Burchard was nodding.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"And I talked to Dr. Hamlin at some length. I . . . I wanted to try to understand the full implications of this. I wanted to understand what they're going to try to do."

"And do you understand?"

"No. Do you?"

"In part. They're going to try to control the depression first, using a type of cell grafting. It works very well in the treatment of MS. Elliot—Dr. Hamlin—thinks it can be applied to your husband's condition as well."

"I don't see how, but then, I have no medical background whatsoever." The woman's gaze sharpened and dug into Annette's composure. "You're a doctor, Ms. Geller. More to the point, you're *his* doctor. What do you think of this?"

Don't ask me that. "I'm . . . neutral, I suppose." *Liar.* "My first duty is to your husband's welfare. He voluntarily applied to Dr. Hamlin to take part in his research—"

"In the hope that it meant a cure." Deborah slid forward in her chair. "You don't know what it means to him to believe this is genetic and not . . . emotional." She looked suddenly embarrassed. "That was a stupid thing to say. Of course, you know—you're his psychiatrist."

Annette raised her hand. "No, please. You're right. I don't know what it means to him, because he's never discussed it with me. I had no idea he was following developments in neurobiology. My degree in psychology doesn't make me omniscient, Deborah. You . . . you think this an important development, then. That his expectations are high?"

"Oh, yes. Oh, yes, of course. He can handle the idea that there's something wrong with his body. But to think there's something wrong with his *mind*—that's terrifying."

Annette glanced down at her hands. Her fingers were knotted together like a bundle of jointed snakes, strangling each other in a white-knuckled death grip. She made them slip apart and lie benignly in her lap. "Deborah, Brooke needs to be aware that this could be a false trial. That he could find himself right back where he started—fighting depression from the inside. In fact, I want him to remain in counseling during the treatments."

"Oh, of course. Dr. Hamlin said it was essential that he have counseling during the treatment process. For patience. He'll have to have so much patience."

Patience. More than she seemed to have. Annette wanted to storm Elliot's office and demand results. Miracles, Dr. Hamlin. Give us miracles. And give them now.

She swam that evening until she was exhausted, sat in the hot tub until she was limp, and went home too tired to contemplate resistance or patience or anything else. Elliot called to see if she wanted to go out to a movie. No, she said, she'd just read the book. She didn't want to see someone else's conceptions

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of *The Land Between Two Rivers*. That would ruin it for her.

She went to bed early instead, and dreamed of driving a car too fast on a rain-slick road. Of not being able to find the brake pedal. All night long she swerved drunkenly through her own back country. By morning she was exhausted.

"How do you feel?"

Brooke sat back in the overstuffed chair and smiled. "Good. Tired. Good."

Annette nodded encouragingly. "Good?"

"Yeah. I feel . . ." Brooke rolled his eyes up to the ceiling and laughed. "This is going to sound silly, but I asked Deb that just after she had Valerie. 'How do you feel?' She came up with tired, cozy, spent, fuzzy and radiantly exhausted. That's how I feel, I guess. Like I've just had a baby. Radiantly exhausted."

"It's too early to feel any effects from the graft," Annette observed, cautious.

"Oh, I know. It's just knowing. You know—knowing that it's just a cocked-up gene not a-a ghost."

"A—"

He raised his hand. "Not literally. You know what I mean. Something . . . supernatural in the sense that you can't make it go away. There's no medicine for it, no remedy. You can't even pin it down, put a name on it. These enzymes of Dr. Hamlin's—they have names. And they have jobs. Now, we just have to find out who's loafing."

Oh, how easy that sounds. "It's not that simple, Brooke. I think you know that . . . don't you?" She turned the statement quickly into a question.

"It's simpler," he said, "than sifting through complexes and compulsions and . . ." He grimaced. "Ghosts. Chimeras."

And what does that make me—a witch doctor? "What if they never isolate the enzyme?"

"Oh, they will. I might not be alive to benefit from it, but Dr. Hamlin or someone like him will isolate it."

Annette spread her hands. "So you're willing to resign yourself to it, then?"

"Resign myself?" He read the ceiling for a moment. "I hadn't really looked at it that way. I guess I feel like I have a point of reference now. When I feel that . . . pumping start in the back of my head—the Nightmare Generator, I call it—I can at least say I know what's going on. I can . . . isolate it. Deal with it."

"And that helps?"

"Yes. God, of course it helps! Doesn't it always help to know what you're fighting?"

"But it's out of your control, doesn't that bother you?"

"Doctor, it's always been out of my control. I just didn't know it. Didn't want to admit it." He leaned forward in the chair, hands clasped between his knees. "Do you have any idea what it feels like to fail yourself over and over again? That's what it was like all those years I spent in therapy, knowing I had this

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

disease, not knowing where the hell it came from or why. All my doctors led me to believe I could control it. *You* led me to believe it. And every time I lost control and the Nightmare Generator went off on one of its maniac jaunts, I felt like a total and complete failure. A traitor . . . to myself and to the people who depend on me. I started wondering if deep down inside I wasn't just like one of those little nested dolls. The kind you open up and find another, smaller doll inside? Selves within selves, complexes within complexes. Maybe, I thought, I *want* to fail. I *want* pity. I *like* guilt. I'm punishing myself for . . . not saving my father's life somehow."

She started to leap on that and caught herself. "Do you think that's a possibility?" she asked neutrally.

He chuckled. "Sure. I *did* feel guilty about my father's death. If I'd been a better son, he wouldn't have killed himself. I don't believe that, of course, especially not now. But the thought does occur. But don't you see? *Anyone* would feel like that under the circumstances. *Anyone.* But because of the gene, what might have been just an occasional, nagging doubt became . . . a nightmare. All my doubts, all my fears, all my unhappinesses ran away with me." He paused and looked down at his interlaced fingers. "*Run* away with me."

"But you think you can control it—the Nightmare Generator?"

He shook his head. "No. But now I know where it lives."

* * *

"I can't help him, anymore, Elliot."

She might have been a bit of data that had refused to behave itself, the way he looked at her. "That's absurd. Of course you can help him."

"This isn't my field. This is your field. I don't know what I'm doing here."

"This isn't a competition, Annette. Brooke needs both of us. He needs me to isolate the problem and you to help him deal with waiting. He's still a manic depressive. He still hallucinates. His brain is still overwhelmed by the impulses that cause both disorders. It doesn't matter that the cause is physiological rather than psychogenic. The *effects* are psychological."

"I might as well resort to beads and rattles."

"Don't knock beads and rattles if that helps Brooke stay in control—"

"He *can't* stay in control, dammit! There's nothing for him to do but wait."

"Then, for God's sake, help him wait. You're a psychiatrist, Annette. You have a degree in behavioral psych. *Use* it."

"How? How, use it?"

What was that look? Was that pity? Frustration? She couldn't tell, but it unraveled the last of her objectivity and she felt like hitting him. Or crying. *Too close. We're too close for this to work.* She opened her mouth to say that, but he was talking.

"You've counseled terminal pa-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tients, haven't you?"

The question disoriented her. She spent a dazed moment trying to see the connection. She shook her head. "No. No I haven't."

Elliot pulled his eyes away and began toying with a paperweight on his desk. "Out of choice or never been called upon?"

"I . . . I have been approached, but . . ." She felt in her pockets for lint. "I've usually referred them to other doctors. Specialists."

"Why?"

"I'm . . . not . . . a specialist in that area."

"Don't you mean you don't *want* to be a specialist in that area?"

She stared at the blond forelock that shielded his eyes from hers. "Switching fields, Elliot?"

"What is it about terminals you don't like?"

"I didn't say—"

"I know what you didn't say. What is it about terminals that . . . disturbs you?"

"I'm not disturbed by—"

"Why don't you want to deal with them, Annette? Why do you avoid dealing with them?"

She crossed her arms tight over her chest. "All right, Dr. Hamlin. Since you seem to know me better than I know myself, you tell me why I avoid dealing with terminal patients."

"Because you can't control what happens to them."

Outrage flooded her ears with hot, stinging blood. "*I* can't—*I* can't control what happens to them? God Almighty, Elliot, you make me sound like some kind of control freak! Annette, who would be God!"

He was shaking his head.

"Is that really what you think of me? As a professional? As a person?"

"Well, you are just the tiniest bit of a control freak. But that's not what this is really about, I don't think." He smiled, which only poured fuel on her fire.

"You don't believe in what I do, do you? You don't believe in psychiatry as a valid science."

He waggled his head. "Belief? It's not a religion, 'Nette. It *is* a science and an art, but like any other methodology, it has its domain. I think in this case psychiatry has to share a kingdom with neurobiology. I can deal with the concrete business of irregular molecular ferries and genetic disorder. Slowly, surely, we're learning more and more about what makes the human animal tick. But, I need someone like you to handle the human consequences. Brooke needs someone like you."

"Someone *like* me, maybe, but not me. I can't do anything for him but sit and listen. I don't even know what questions to ask him anymore."

"Ask him how he feels."

Annette took a deep breath and felt her face cool. "I'm going to turn Brooke's case over to another therapist."

Elliot hung his head and she believed for a moment it was in contrition. But when he looked at her again what she saw in his eyes was disappointment. "I never thought

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

you were a quitter, 'Nette," he said.

She turned Brooke over to a resident psychologist who dealt, largely, with terminal cancer patients and AIDS victims. She saw him only rarely and in passing, and saw Elliot less. She heard about both of them, though. She had a girlfriend on Elliot's staff who kept her abreast of developments, and she spent her lunch hours in the cafeteria where she would be sure to hear any talk among the residents.

"Were you listening?"

Annette pulled her eyes away from the row of French doors that opened onto the patio. Suzanne Murphy gazed up at her over a turkey sandwich dripping with alfalfa sprouts.

"I'm sorry, Sues. I guess I wasn't. You were, um, saying something about dopamine?"

Suzanne nodded. "That's what they thought it was at first, dopamine flooding the neural network. Elly was proceeding on that idea, but . . ." She shrugged. "False track. Dopamine levels were normal even during critical episodes."

She'd captured Annette's full attention. "He's had . . . critical episodes? Bad ones?"

"There's such a thing as a good one?" Suzanne shrugged again. "It's been difficult for him. Difficult for his family."

"How is he responding to Dr. Faizi?"

"He likes her, well enough, but I think he feels more comfortable with you. You've been with him longer." She glanced at the rising pile of sprouts on her plate. "It was hard for him to have to switch therapists at such a critical juncture."

Damn. "I'm sorry. I just didn't feel like I was doing him any good."

"I think you underestimate yourself."

Annette ignored that. "So what's the current line of attack? If it's not dopamine, then what is it?"

"Well, we're all pretty sure Elliot's right about the flooding. The indications are all there. Brooke gets a shot of adrenaline, a charge of emotion and, where the charge should normally shut off and dilute, it keeps snowballing until he's completely overwhelmed. That points to at least one enzyme that's not doing its job. It's getting the emotional messages out into the neural junction, but it's not picking up after itself. Reminds me of my eldest son."

Annette glanced up at her. She was grinning lopsidedly, turkey dangling from the half-eaten sandwich. Annette had to smile. "That simple, huh? An adolescent enzyme?"

"Well, more or less. Transporter proteins, to be more specific. Well, we've eliminated dopamine as the offender. It could be . . . any number of other neurotransmitters. GABA, norepinephrine, serotonin. It's a matter of trial and error at this point."

"So let's say you find the guilty party. Then what?"

"You ought to have Elliot explain

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

this to you. He'd do a much better job of it."

"Yes, well. I haven't spoken to Elliot for a while."

"I thought as much. You ought to, you know . . . speak to him. It's been hard on him, too. The stress, having you . . . disappear on him."

"I haven't disappeared."

"Might as well have."

"Besides, he's got to be loving this. This is his passion—neurobiology, genetics. This is what he lives for."

"Huh. Man does not live by neurobiology alone." Suzanne studied her for a moment, making her feel naked and transparent. "Look, I don't know what's gone haywire between the two of you, but I really think you ought to talk about it."

Annette started to issue a defense, but Suzanne waved the sandwich to forestall her. "Ignore me. I'm just a nosy, backseat-driving yenta. It's your life, hon. You're drivin' the car."

Driving the car. Funny she should say that. It reminded Annette forcibly of her nightmares. Of cars without brakes. Cars with steering wheels that broke off in her hands.

She was driving the car. Brooke couldn't drive his. Something had made of his waking moments what she only encountered in nightmares—forced him to live what "normal" people like Annette Geller only dreamed. A Nightmare Generator. And Elliot might—just might—be able to pull the plug.

When Elliot paged her that afternoon, she was already on her way to his office. She surprised him by appearing within ten seconds of his page.

"That was fast."

"I was already on my way," she admitted. "I wanted to apologize for my behavior and to say . . . that if you still need my help, I'll gladly offer it."

He swept a hand through his hair, making the pale forelock stand almost on end. "Not a moment too soon. Brooke . . . is having a very difficult time just now. We've been tracking transporter molecules for eons of weeks and it's getting harder and harder for him to wait it out."

"The pineal grafts—?"

He made a dismissive gesture. "Limited effectiveness. It takes more to kick him into a manic episode, but when he goes, he goes just as deep."

"Suzanne tried to explain to me about the neurotransmitters and the flooding."

His expression changed. "Yeah. Yeah." He stood up and came around his desk, hands gesturing. "We're on the right track here, I just know it. I can *feel* it. It's just a matter of isolating the neurotransmitters that are flooding, then backtracking to the transporter molecules responsible for cleaning them up."

Annette sat down in his patient chair and folded her hands in her lap. "Enlighten me, Doctor. What's the mechanism?"

Elliot perched on the edge of his

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

desk. *Lecture pose*, thought Annette, and realized how much she'd missed him.

"OK, look. In response to stimulus, neurotransmitters deliver a chemical message from one nerve cell to another. Be sad. Be happy. Get your hand off the stove. That sort of thing. So far so good?"

She nodded.

"When the stimulus ends, the transporter proteins or molecules, which are enzymes by the way, are supposed to ferry the neurotransmitters back to the cell of origin."

"Cleanup committee."

"Exactly. Only in Brooke's case, there is no cleanup committee. The synapses stay flooded with the neurotransmitter and the system is overwhelmed."

"Assuming you isolate the lazy transporter, then what?"

"Then, the serious work starts. We isolate, from Brooke's brain, the DNA sequences that create the transporter proteins which, in turn, target the problem neurotransmitter or transmitters. We should be able to insert those sequences into lab-grown cells and cause them to produce the needed transporters. Then, we'll reintroduce the healthy, productive cells back into Brooke's body."

"That probably means more grafting, then. And what, bone marrow transplants?"

"Possibly. But we're close, Annette. Really close."

Annette nodded. "So, suddenly Brooke is having trouble waiting? Now, when you're so close to a solution?"

"Not exactly, Doc. Don't fly off looking for self-immolation complexes. He's running true to form. It's guilt."

"Guilt? Oh, Valerie—"

Elliot shook his head. "No. Valerie doesn't have the gene. Brooke feels guilty that so many people are putting so much time and money and effort into solving his little, insignificant, if-I-die-it-will-go-away problem. He doesn't think he's worth it."

"Doesn't think he's worth it? Does he realize what's riding on this research for other depressives?"

Elliot gestured at the door. "Go give him hell, Doc."

"What about Dr. Faizi? Hasn't she been able to help? She's so good with the terminal patients—"

He was shaking his head. "Annette, Brooke isn't terminal. He's a relatively young man, with a young family and a lot of living to do. A totally different scenario. Brooke isn't dealing with a biological fact that will affect the way he *dies*—unless he commits suicide. He's dealing with a biological fact that will affect the way he *lives*. He's not surrendering control. He's fighting to achieve it for the first time in his life."

"A faceless enemy," murmured Annette. "That's what he's been fighting. Only your work could give the enemy a face."

"It's easier to fight what you can see."

"And understand," she added.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"And control." She got up and smoothed her jacket. "Where's Brooke now? I'd like to see him."

"In Observation."

She nodded and moved to the door. "You were right, you know. About the control issue. I was terrified of not being able to stay in control of Brooke's progress. I was terrified for him *and* for me."

"Because you care," said Elliot. "That's what you didn't wait around to hear that day two months and seven days ago when you stormed out of here in a high dudgeon. You wanted to control Brooke's progress because you care about him. I knew that."

Annette grimaced and waggled her head. "So much for my professional objectivity."

"Oh, to hell with your objectivity. I like you this way."

"Enough to marry me?"

"I never took the wedding off *my* calendar." The tone of his voice caused much dancing among her own neurotransmitters. She didn't care if the cleanup crew took the rest of eternity off.

"Dinner tonight?" she asked.

He nodded. "And a movie?" His eyes glinted.

"What's playing?"

"The Land Between Two Rivers."

"But I just read the book and—" She made a wry face. "Ah. The control freak strikes again. The movie sounds great. Right now, I'm going to go do my job. I'm going to tell Brooke Burchard just what I think he's worth."

* * *

Brooke Burchard sat at a window table, a book open in front of him, his eyes on something outside. He was haggard, lost-looking. It was enough to make Annette want to cry out, "Unfair!" Unfair to booby trap someone's body. Unfair to fill it with miniature terrorists that could hold an entire life hostage. Especially unfair to such a remarkable man as Brooke Burchard.

Who might not be so remarkable, Annette realized, without his particular torment to shape him. *Is there really no such thing as complete darkness?*

She stirred slightly in the doorway of his room, folding her arms over her chest in a reproving pose. "Elliot tells me you've been causing trouble."

He glanced up at her—a quick parry of the eyes, followed by a downward feint. He dog-eared the page of his book, worrying it.

She entered the room, allowing the door to close behind her, and took the seat opposite him at the little table. "I owe you an apology," she said. "A heartfelt apology. I'm sorry, Brooke. I'm sorry I let you down."

His eyes swung upward again, gauging, reading. He shook his head. "You don't owe me anything. I'm the one who should apologize. I've been so much trouble."

"No. *I'm* the problem, here, not you. I want to try to explain to you why I quit on you."

"I understand—"

"No. I don't think so. Brooke, you could do me a big favor, if you

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

would."

"What could I do for you?"

"Listen to me. You've told me about your nightmares. I'd like to tell you about mine."

He nodded, wariness covering his eyes like a shield.

"Just before I . . . abandoned you to Dr. Faizi—" He started to protest, and she raised her hand. "No. I *did* abandon you. No excuse for that, but I want you to understand why. Just before that, I started having nightmares. Nightmares about driving a car with no brakes over an icy road. About losing control of the car and crashing. I failed, Brooke. I failed to control the car. And it scared me.

"I quit because I couldn't control what was happening to you. I wanted to cure you, I guess, with my bare hands. I thought, somehow, that when Elliot found a biological determinant in your case, it took you out of my control. And that if I wasn't in control, I couldn't help. But you never were *in* my control to begin with."

She glanced down at her hands, folded on the table. "The truth is, we're more complex creatures than I realized and more . . . integrated, I guess. Somehow, I saw Elliot's province as the body and mine as the mind, and I couldn't see that those provinces are not as separate as I would have them be. I can't do anything about that gene. Elliot can. But I can help you through the process of dealing with it . . . if you'll have me back."

He looked doubtful. "You're sure you want to do that? I've been so much trouble. You people are trying so hard to cure me and I'm hardly worth—"

She grasped both his hands, curtailing their torture of the book. "That's our job, Brooke. It's what we do. But before you write yourself off as a waste of time, let me admit something to you. I told your wife once that a Ph.D. in psychology doesn't make someone omniscient. Truth is, it doesn't necessarily give them clear insights into their *own* workings. You've done that, though. *You've* given me insights I've never had."

He almost smiled, his mouth tugging tentatively upward at the corners. "I've helped *you?*"

She nodded. "Everybody has a Nightmare Generator, Brooke. You're not alone in that. You helped me recognize mine . . . and control it. I owe you one. And a lot of other people are going to owe you, too, once Elliot comes through with his part in this."

"How do you figure that? I won't have done anything."

"You'll have stayed alive. You'll have shown other people with this disorder that the search for a cure is worth wading through the nightmares and exorcising the ghosts. Maybe that will give them the courage to do what you've done. You can be . . . a role model."

He laughed outright at that. "Me? A role model?"

"You've been that for me. You know yourself well, Brooke, because you've had to. That's more

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

than a lot of us so-called 'normal' people can claim. We who do not have to fight for sanity may take it a bit too lightly."

He ducked his head—an odd, bashful gesture. "That thought had occurred to me." He looked up at her, smile complete and roguish.

She laughed. "Somehow, Brooke, that doesn't surprise me. . . . So, do I have my old job back?"

He nodded.

"Thank you," she said.

"Thank *you*." He extended his hand to her over the table.

She took it, shook it, and rose to leave. "I'd better check in at my office. See what other lessons I can learn today."

"Dr. Geller—"

"Annette."

He nodded diffidently. "Annette. Thank you for sharing your nightmares with me. Somehow a nightmare shared is . . . just a bad dream."

Warmth. She looked at him sitting there in his hospital blues, weary and vulnerable and hopeful, and felt it flood from core to extremities. *So much for my objectivity.* "We'll share some good ones, too," she told him, "I can feel it in my synapses." ■

Clarion West Science Fiction Writer's Workshop Now Open for Applications

Applications are now being accepted for the 1993 Clarion West Writer's Workshop in Seattle. The intensive six-week workshop prepares writers for professional careers in science fiction and fantasy.

The tenth annual workshop will be held from June 20 to July 30, 1992, at Seattle Central Community College, Seattle, Washington. Writers-in-residence are Pat Murphy, Geoff Ryman, Connie Willis, Lucius Shepard, Alice K. Turner, and Greg Bear. Approximately twenty students will be accepted.

In workshop sessions, students work with the writers-in-residence to critique students' stories. They meet with each week's writer for private consultations, are given assignments and writing exercises, and are expected to start and complete independent projects during the workshop.

Tuition is $1095. April 1, 1993 is the deadline for applications. Applications received by March 1, 1993 will receive a $100 tuition reduction. Housing, not including meals, is available at additional cost for the six-week workshop. Limited scholarships exist. College credit is also available at additional cost.

Please write or call for application and scholarship information: Clarion West, Suite 350, 15th Avenue East, Seattle WA 98112, (206) 322-9083.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(continued from page 133)
had awakened in Atlanta without knowing how he got there and called her. She had flown to his arms, and now you say you're *not* Tony? But you look like him. What the hell is going on?

The reader is not terribly mystified, for Hogan promptly reveals that the research project dealt with reading skills from one mind in order to instill them in others. The project's ostensible purpose was to improve military training. Jarrow got involved (involuntarily) because his so-PC mind was just the thing with which to test the feasibility of programming the citizenry's attitudes as well as its skills. But something went wrong. Jarrow got transferred whole. Yet something also went right, for when the government's thugs arrive to recapture him, he demonstrates superb secret-agent skills.

Now he's running, straight into the arms of Pipeline, an underground organization that smuggles people from West to East and even to the Offworld colonies. They tell him that Ashling, the scientist behind the skill-transfer project, was with them in that Atlanta hotel, on his way to freedom. But he disappeared, apparently because Gordon/Demiro/Jarrow was there. Will Gordon/etc. help them figure out what happened? What is going on in that project? Alas, Jarrow's brain is so clean it doesn't need washing. When he gets back to his masters he spills all.

And then he is off to recapture Ashling, pursuing the clues into the East and to the Moon to an ending that must surprise despite all the secrets both Hogan and I reveal ahead of time.

The tale's problems begin with the future Hogan posits: First, the reversal of traditional West-East stereotypes is a nice device, but it is here so extreme that I cannot help but doubt. That is, I found it difficult to suspend my disbelief.

Second, the idea that liberating science, technology, and business from government regulation will solve all possible problems is an old stand-by of SF (perhaps especially in this magazine), but again I have my doubts. Things aren't that simple. There *is* a case to be made for regulation, although I immediately grant you that excessive regulation can be quite oppressive. The problem is achieving a balance that both protects the public from exploitation and permits progress. On the other hand, I must admit, such a balance would make it a little harder to motivate a story such as this.

Third, I wasn't entirely happy with Hogan's choice to present background data by flashing back to Jarrow's life, to Demiro's life, to what the secret masters are saying, and so on. This is a question of style, and it doesn't work too badly, but I did find the backtracks intrusive and offputting; I think the story would have been stronger with a tighter focus.

Hogan displays a very good hand with the technology and intrigue and characters. If an unrealistically high-contrast, black-and-white backdrop does not bother you, you will love this one. If you too think the backdrop should be as realistic as all the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

rest, you won't.

Helen Collins displays immense promise in **Mutagenesis,** a first SF novel that should appeal both to fans of hard SF with a biological slant and to feminists, though not in quite the way one might expect.

To quote from her "General background" afterword, within the century "after the development of interstellar travel, Earth people colonized several habitable planets, including Anu." War then "destroyed most scientific knowledge and all hard technology. The settlements were cut off from Earth." At the same time, Earth was cut off from its settlements, and it was in trouble. "Irresponsible [agricultural practices and] genetic manipulation [had] almost ruined Earth's food grasses." When technology redeveloped, missions were sent out to the abandoned settlements in hope of finding crop strains with which to revivify Earth's food supply.

Mutagenesis is the tale of the mission to Anu, a mineral-poor world of hot sun, flat plateaus, and water-filled gorges, whose native life is not compatible with Earthly life without extensive genetic manipulation. The explorers do not expect to find human life there. They hope some of the old crop varieties have lingered. Much to their surprise, the planet is heavily cultivated. People are there indeed. But they are strange. All males are called "father"—youngfathers and oldfathers and veryoldfathers—or "brother." The females, all "daughters," are placid dolls engulfed in multi-layered dresses and tended by beasts called losos. Very few show any sign of intelligence or mind or will.

One of the explorers is a psychologist and anthropologist who is quite thrilled by the unique lifeways all around him and dead set against any effort to "correct" what some might see as errors. Another is a woman, Mattie, a genetic engineer; when the locals see her, a woman as independent and willful as any "father," they refuse to cooperate with the explorers until she has been confined to the ship. Not surprisingly, she busts loose and sets out across the land to discover the truth of this strange world.

She soon recruits a small group of local women who are not content with their lot. One struggles to be an artist. Another has a remarkable mechanical intuition. She witnesses a loso giving birth to a human baby. She learns of the Eastcountry "doctors" who run the wooden train, provide all health care, and furnish the bacteria that make the soil able to support Earthly crops. She registers the signs that losos have both animal and human features. She . . .

It gives away nothing to say that Eastcountry is home to some remarkably capable genetic engineers who see every living thing as a thing to be manipulated, to be adjusted to suit their vision of the way things ought to be. The reader can see this coming from very near the beginning of the story, as soon as Collins signals that the local women's doll-like mindlessness is more than a matter of social conditioning. However, the manipulation goes much deeper than that, as

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mattie learns when she and her companions become prisoners of the genetic engineers.

I don't want to say too much. But let me point to a parallel that Collins uses but does not develop as explicitly as she might have. The agricultural practice that ruined Earth's grasses was monoculture, which wiped out the genetic variety essential to long-term survival. She offers us an attempt at human monoculture, but then she fails to discuss its consequences as they deserve. She gets sidetracked into discussions of personhood and sex and the arrogance of paternalistic technicians. These issues quite definitely arise in the situation that Collins has imagined, and she has at least one worthwhile comment on personhood and gender. Unfortunately, many SF writers have dealt with the same issues before. Collins missed a chance to say something more original when she lost her focus on the human monoculture.

Still, she has given us a rewarding and interesting novel that I do expect to see on award ballots. I also expect her future work to be even better.

The most unfortunate thing about Lisa Goldstein's latest novel, **Strange Devices of the Sun and Moon,** is that it so strongly echoes many fantasies by other people. Here are the folk of Faerie, from Queen Oriana down to the lowliest Brownie or will-o-the-wisp. Here are dark versus light, the male drive for power and wealth versus the female quest for peace and family, changelings, battle and victory, and the closing of the paths between Faerie and ourselves. The tale thus smells of conventional mass-market boilerplate rack-filler.

If you look past the surface, on the other hand, Goldstein's tale has some very fortunate features indeed. For one thing, her conflict of dark versus light is *not* one of good versus evil, and victory is presented as a quite undesirable outcome compared to the virtues of reconciliation. For another, this author has a marvelous feel for the fabric of history. Her setting is the London of the early 1590s. Shakespeare is yet unheard of. The local arts scene is dominated by Christopher Marlowe, Tom Nashe, Tom Kyd, and the like; men who sell their poems and plays to the booksellers for pennies while struggling to avoid the attentions of censors and Star Chambers. To survive, some take other work; Marlowe is a spy seeking evidence of a conspiracy to assassinate the queen.

London's booksellers are arrayed in the yard of St. Paul's. One is Alice, whose son Arthur grew up a little fey, disappeared, and now is sought by several parties because he has been heard claiming to be king. Alice has witnessed the revels of Queen Oriana and her folk. Now Brownie lives in her house. She herself is sought for personal purposes by George, another bookseller; when she refuses him, he falls in with the forces of dark, who promise him aid in his suit if only he will help them grab Arthur.

Meanwhile, Marlowe's spymaster places him at the palace as a secretary. He overhears ominous lines, sees strange beings, and helps un-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cover precisely the sort of plot he has been assigned to seek.

Alice's friend Margery, whose home is full of herbs and crystal balls and cats, learns of a faerie prince switched with a mortal for safety's sake. Queen Oriana is in London partly to search out that prince. And the lines converge.

Goldstein's handling of Faerie is deft enough. So is the intrigue that drives her plot. But the result is predictable in so many respects that this is not a suspenseful tale. It is instead a colorful tale, one that convincingly evokes the feel of a time in history. Nor does it mar that feel with the intrusion of Faerie, for very few of Goldstein's characters even glimpse what is happening all around them.

Even more appealing to some will be its rendition of a stage in the birth of the publishing industry—and let's note here that in editor David Hartwell's letter to reviewers that accompanied the book's galleys, he said, "It is so well-researched [sic] that one of my ancestors is in it."

Norman Spinrad has a marvelously fertile mind. At his worst, he writes better than most writers on the racks today. At his best, he writes like an angel, with sure characterization, deft pacing, and a well-tuned ear for a phrase. A new novel with his name on the cover thus has instant appeal.

His latest, **Deus X,** lives up to expectation in many ways. The ideas and characters are as entrancing as ever. The package is considerably slimmer than his usual, but that's not really a problem when so many modern books suffer from elephantiasis. The only real difficulty arises in connection with the phrasing—sometimes hurried and too, too hip —which occasionally made me think of a wino chugging Thunderbird with his pinky in the air.

Spinrad's future Earth is well on its way to hell, what with greenhouse heat waves, ozone fritters, and so on. Large portions of the tropics and near-tropics are uninhabitable for at least part of the year. Millions have died. Yet billions remain, and computer technology is so advanced that those with the gelt can have their "software" copied into the worldwide Net, there to revel in electronic disneylands forevermore. Naturally enough, this terminal option has thrown a hoodoo at organized religion, especially the Roman Catholic Church, which has seen its membership decline drastically. And the RCs didn't help their case when they straddled the fence on the vital question of whether the software spirits of the dearly departed had souls and were thus real, alive, as fully human as their originals, or whether silicon immortality was a Satanic deception.

Meet Marley Philippe. He's a black, black dude who cruises the world's dying seas in a high-tech sailboat while smoking Herbal spliffs. He finances his lifestyle by working as an electronic private eye, dealing with the Net's independent "entities," human copies (and other things) escaped into the operating system and immune to erasure. To him comes Cardinal Silver, emissary of Pope Mary I, with a mission. To settle the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

question of whether software spirits have souls, Mary I had drafted on his deathbed Father De Leone, the most ardent and persuasive of those theologians who insisted they didn't. Her techs copied his software, and then she said, in effect, "There you go. *Now* tell me copies don't have souls. If you can convince me from your present vantage, I'll issue an infallible bull on your side of the issue. If you can't, I'll say copies do have souls, we'll be in step with the times, and membership will go up again."

Well, how would *you* handle it?

All was going so well, too. Until someone or something swiped the digital De Leone from the Vatican's computers, which supposedly could not be cracked, no how, no way.

"Now how about it, Marley?" says the Cardinal as he takes a hit of Herb. "Can you find out who did the deed? Get De Leone back? We'll pay you well, of course."

And of course, he can. He does. He discovers whole new levels to the Net, a Vortex, a Whirlwind, a depth of craving for identity and being that a mere human can barely grasp.

Spinrad is grappling here with a very real—if you believe in souls—conundrum of the coming computer age. If it's hard to say that the answers he proposes are convincing, that is surely because the issues are not really debatable—they're issues of belief, not reason. I suspect it will take a generation of living with widely available silicon immortality to produce even a partial consensus. I also suspect that once we do have such a consensus, it will match up pretty closely with Spinrad's thinking.

I didn't care for Lee Ballentine's third collection of poems, **Dream Protocols.** Will you? Well...

Ballentine has a reputation for "sharp turns of mind" and language "suggestive of computer code [and] instruction manuals for foreign-made equipment." Perhaps that's the problem. He displays a formidable mind that is in love with the language and enchanted by imagery ("He dreams himself a salamander Dipped in the mirror"—from the title poem), but he generally places the bizarre and cryptic center stage instead of using them for accent. The result is poetry that strikes me as the sort that is all too easy to ridicule for its apparent arbitrariness and inaccessibility—even though closer examination can indeed find sense and even story behind the haze of sound and image.

The collages that illustrate the book, by Richard Kadrey, are the sorts of things you've seen elsewhere: decorative juxtapositions of public-domain images, many from the Victorian era, meant to perk up the mind. They don't seem to have much to do with Ballentine's poems.

ANADEMS

Toot-toot-tootle. The fourth novel in my "organic future" series is scheduled for May release from Ace. The first three were *Sparrowhawk*, *Greenhouse*, and *Woodsman*. This is *Tower of the Gods*. The next one will be *Seeds of Destiny*. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

BRASS TACKS

Dear Dr. Schmidt,

I am an *Analog* reader through the use of talking book flexible discs. I found your August editorial (Reader's Choice) intriguing and disturbing. You suggest, after briefly mentioning braille and talking books, that high magnification of printed books is the only necessary solution to access print. I agree that large print is important for many people and should be made as widely available as regular print, but what about the rest of us?

Large print should never be the only option for visually-impaired people and it is not the best option for many. You may not have intended the exclusion, but in your plan for electronic books, could you include a provision whereby the books can be hooked up to a speech synthesizer or a braille printer? This would allow the whole bookstore to be accessible to all of us.

NANCY SCOTT

Easton, PA

No, I didn't mean to suggest that large print was the only *solution, or the right one for everybody. Once you have the book in digital form, it's relatively easy to provide the output in* lots *of forms—including the ones you mention.*

Dear Stan,

I read your editorial on cyberbooks in the August *Analog* and I just had to laugh and write. The problem is that technological advancement of the books will render work of as little as 20 years ago inaccessible. The great thing about books is that they haven't upgraded them for 500 years so we can still read them. Tried to play any 78 RPM records recently? And in 200 years? Already I have programs I don't use because the computer is in storage. Long-range cyberbooks make my blood run cold!

CHARLIE HICKOK

Harrisburg, PA

The August 1992 editorial was about some of the advantages *cyberbooks can have; your postcard was about one of the (big)* disadvantages *they can have. I've thought about that one, too; in fact, my August 1991 editorial, exactly one year earlier, was devoted entirely to that. I can't say, as you do, that cyberbooks scare me; it's just that people are going to have to start thinking long term and making provisions for seeing that old information* can *be transferred into new media easily. What you and I are both concerned about is a huge problem, but a new one; I'm not yet con-*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

vinced it has to remain so. But we do need some real effort going into ways to get the advantages without the disadvantage!

Dear Mr. Enquist,

Re your angst attack in the 9/92 issue of *Analog*: First, you probably *are* superior. In some ways. Most of us are. I once knew a not-very-bright young man who could pick up any new musical instrument and play it within minutes. Don't get hung up on this question—it blinds you to the real value of those around you—and yourself.

So, to the real question—why do you and I read science fiction? Since you happen to respect one of my own "best friends," I'll concentrate on the Vorkosigan family as I look for an answer.

Are Lois McMaster Bujold's books "great literature"? I don't know. Certainly her works have flaws. The implausibility of coincidence, time after time (Cordelia and Aral meeting the second time, Elena's mother's presence on the besieged planet) is one, no matter how skillfully she works the puppet strings; her occasionally stilted language and grammatic habits are another. Yet—she weaves worlds which are not only internally consistent, but which interact within a plausible universe. She uses science well, positing that technology is on the current cutting edge of our accumulating skills, such as genetic manipulation, and "inventing" breakthroughs that are logical constructs of what we are learning about physics, such as wormhole travel and artificial gravity. But the science is secondary to the real purpose of her books, which (correct me if I'm wrong, Ms. Bujold) is to explore the intricacies of human character, motivation, and action, and their moral implications.

I do consider the Vorkosigans to be close friends, whom I visit regularly when I need a reality check—was it the poet John Ciardi who commented that non-fiction must stick with the facts, while fiction is free to deal with the truth? Others of my friends are Harriet Vane and Peter Wimsey, Flinx and his mini-drag, the Virginian, Ender and Valentine, Captain Blood, Twain's Pudd'nhead Wilson, and James Schmitz's witches—all of them bigger than life. Surely, these fictional characters are worthwhile for their entertainment value alone; as a ten-year victim of Chronic Fatigue Syndrome, I no longer have the ability to go dancing, climb mountains, fly my airplane, or carouse with my friends. But as long as I am strong enough to hold a paperback book, my life is full and rewarding.

Now, back to your question: You are not hypocritical. You are normal. As Ciardi (I think) implied, the real world is concerned with facts, not truths. The truth is that you, like the vast majority of us, are a good, sensitive, honest fellow who is prone to making mistakes. Problem is, we are also convinced that we have to be perfect in order to be acceptable. This means that we are terribly embarrassed when we make even minor errors. We also tend to judge ourselves in relation to others, rather than abstractly, and when someone

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

near us makes a boo-boo we snicker superiorly. This reinforces each individual's (of course there are exceptions; most of them are in the lower ranks of various ministerial organizations) private reluctance to let the rest of the world past our defenses. You *can't* let your defenses down; your society would dismiss you as some kind of nut. But while reading literary constructs with truthful characters, you can shed your inhibitions and be yourself—take a vacation from the real world into reality. (Think about the significance of the magazine's title, *Analog.)*

That is the prime function of literature. We call it entertainment, or enlarging our horizons (we lie to ourselves endlessly!) but what it is, is sanity. And science fiction/fantasy has the most scope for reality precisely because it is *not* constrained by the need to be factual even to the extent that mainstream literature is.

Most importantly, Bujold's (Card's, Twain's . . .) characters give us permission to make mistakes. In spite of being larger than life, "superior," they are imperfect—Miles misjudges, and Bothari dies; Negri misjudges, and a planet-wide war breaks out. But they also challenge us to meet two standards—to do the best we can, and to forgive ourselves for being imperfect. Gregor agonizes over options of duty, desertion, and suicide; don't we all? In the end, he goes back to his duty, knowing himself better than before; in this way he/Bujold challenge(s) us to examine ourselves, to weigh options, to make decisions—and to take responsibility for and forgive ourselves for our mistakes/desertions. Of course, the prime example of this self-forgiveness is Miles's developing mastery of his periodic depression; Dr. Beck doesn't have much to teach Bujold about Cognitive Therapy.

I impatiently await the book in which Gregor abdicates in Miles's favor. I understand that this is not currently being planned, but hope springs eternal. Perhaps some day we will also see more of Elli Quinn and Elena Bothari-Jessek? They live up to Aral's initial evaluation of Cordelia as a soldier who is not an imitation male; strong, female characters are so rare in any genre that when found they should be given the full available scope to develop their realities.

Anyway, don't castigate yourself too much for not living up to your ideals. Those of us who do tend to be burnt at the stake, locked up, medicated, or ostracized. But, bearing in mind Cordelia Naismith Vorkosigan's comments about challenges and tests, do keep trying to edge yourself closer to those ideals, and to forgive yourself when you slip, always remembering that the only true failure is to refuse the test.

MARY SCHROEDER-BLUMKE
1333 Longshore Avenue
Philadelphia, PA, 19111

P.S. Anyone who wants to disagree with me—feel free. Just don't expect me to get upset about it. If you write, I'll read, but don't expect an answer. I'm too tired.

Dear Dr. Schmidt:

I have two problems with the life form in "Invitation to Ecstasy," one

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

biological and one physical (9/92). First, it doesn't make sense that there'd be just a few of these organisms, and that they'd put so much effort into traveling from star to star. One would expect them to stay near one star, multiplying until the star was surrounded by them, or they ran up against some other limit; only then would a few travel to other stars to breed and colonize. It might be possible to devise reasons why they follow a different pattern, but Mr. Rollins didn't provide an adequate explanation.

Secondly, the protagonist is killed by gravity when it comes too near the Moon—not one-sixth *g*, since it isn't being supported against the Moon's pull, but just by the pull itself. Tidal forces? I don't see how it could be that fragile, and also able to undergo the accelerations needed to change orbit within the Solar System, and within a few hundred thousand kilometers of Earth, and to travel between stars, even over millenia. If there's an explanation, I'm interested in seeing it.

NICHOLAS DAVID ROSEN
3408 Plaza Drive
State College PA 16801

The author replies . . .

I would like to thank Mr. Rosen for taking the time to write. His questions are clearly put. The first question actually raises several points. I will try to touch on all of them.

"Few" is a relative concept, but the population that I envisioned would, indeed, probably qualify as "few" to Mr. Rosen. Actually, it would be easy to have quite a large number of these creatures, but still see very little evidence of them, since they spend the majority of their lives in hibernation. A good analogy would be some of the plants that live in the desert—the seeds are there, but you won't see any evidence of them until you get the once-per-decade rainstorm. Suddenly, there are blooms everywhere.

The aliens expend very little effort in traveling from star to star. They enter a hibernatory state—basically just snoozing as they drift along. Other than maintaining their (extremely low) basal metabolic rate, they do little unless they happen to drift into range of a star. The specific individuals mentioned in the story are among the first of their kind to wake up *between* stars—a risky strategy, but one with potentially large payoffs for their species.

Mr. Rosen and I obviously make different assumptions about alien life forms. To me, it seems patently unlikely that the creatures would stay in one place until population pressures forced them to move on. As a case in point, look at humans: Europe was nowhere near capacity when they began to colonize North America. The early settlers here certainly didn't feel the need to saturate any one area before moving towards the interior of the continent. That aspect of the aliens' psychology seems to me to be well within the normal range of human behavioral patterns, hence easy to understand. If anything, the aliens should probably behave *less* like humans—they are, after all, aliens.

I believe that closer examination will reveal that most organisms are

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

governed, not by local population pressures, but by availability of resources, which is not quite the same thing.

Mr. Rosen seems to make the assumption that high acceleration is necessary to escape from the Solar System—'tain't so. A slow spiral will do the job quite nicely. Indeed, gentle acceleration is all the creature has available, since it travels by using a smallish light sail. Patience is the key, here. These creatures have tremendously long life spans; they are content to move slowly.

The only reason the creature could approach Luna (and Earth) as closely as it did was because it was using Earth's gravitational field to exactly balance that of Luna. Normally, it would not come anywhere close to a large body. I thought I made that point clear in the story; perhaps I failed. If that's the case, please accept my apology.

Tidal forces are based not so much on the *strength* of the gravitational field as on the field *gradient*, which is dependent on distance from the body. Around the Sun the creatures would tend to orbit between Earth and Mars. At this distance, the gradient of the Sun's gravitational field is quite small, at least over the span of the alien's body.

Most of the stories I write behave themselves quite nicely. When I start to write them, I have a fair idea of how long the story will have to be in order to get everything into the story that I want to say. "Invitation to Ecstasy" was an exception. It kept overflowing the boundaries I had set for it. Much of what I wrote did not make it into the story that was in the September issue. I gave in to temptation and am currently working on a book-length version of the story. Perhaps with more room to spread out, I will be able to clarify the aliens' psychology and physiology.

GREY ROLLINS

Dear Dr. Schmidt:

I always read your editorials with interest inasmuch as you have a gift for presenting arguments that deserve consideration, usually from more than one perspective. Your latest editorial, "Two-Stage Process" (9/92), really struck a responsive chord with me. Certainly, effective communication is a two-stage process requiring diligence on the sender's and receiver's part.

Some 20 years ago, I had the interesting and challenging experience of directing a multi-national, multi-lingual 600 man work-force on the island of Guam in the field of civil engineering. While somewhat low-tech, compared to the Aerospace Acquisition and R&D world in which I am currently employed, it was sufficiently technical to exacerbate the requirements for good communication processes. Our work force was comprised of Guamanians, Hawaiians, Japanese, Chinese, Fillipinos, Australians, English (the American variety), and a few that I have probably forgotten. This exercise taught me to speak very clearly, enunciate very distinctly, listen acutely, and to always observe facial reactions wherever possible. Even then, one could not be

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

certain that the message had been received.

During that period of time, I encountered a plaque in someone's office, in Hawaii, which made quite an impression on me. I currently have a copy of the same plaque on my office wall because the implication is universal. I don't know who is the author, but the text reads, "I know you believe you understand what you think I said, but I am not sure you realize that what you heard is not what I meant." Perhaps you have seen this quote; if not, I am certain that you will enjoy the content. It sort of sums up the art of communication.

JAMES E. BURDETTE

Kettering, OH

Dear Dr. Schmidt,

Re: (9/92 editorial) I agree! All beginning writing classes in high school and college should emphasize simplicity and clarity. Literature courses for undergraduates should evaluate writing for its success in clear, precise, and unambiguous communication. I discovered how difficult that was when I wrote chemistry laboratory experiments for undergraduates. I decided I was satisfied when 29 out of 30 students were able to follow my directions without asking for clarification.

When I was in college, I had a roommate who was an English major, so I had exposure to symbolism and hidden meaning in literature. But much of the obscure writing I have observed has been executed by those who have probably *not* taken an advanced course in English.

My education is in analytical chemistry, my experience in medical technology and micro and mini computers. Someone writing for medical and scientific journals is *forced* to an abstruse style. Even given the "It has been found that . . ." style, scientific writing has a long way to go to achieve reasonable clarity and simplicity.

Worse yet is the writing in software manuals. The writers appear to be (1) programmers with no experience in writing clear unambiguous directions, or (2) English majors with inadequate experience in *using* the program. *Suggestion*: Software houses should pay published science fiction authors to use their programs, then rewrite the manual.

Science fiction authors are far from immune to obscure writing. Samuel Delany was one of my two favorite authors until he wrote *Dhalgren*. After I plowed through to the end, I sent it to my old college roommate, who by now had a masters in English and a Ph.D. in education. I had been exchanging SF novels with him, so I knew he wasn't prejudiced against SF and I knew I lacked experience in interpreting symbolism and hidden meaning, so asked him for an opinion. He didn't understand it either. I guess only professional English critics can understand books like that.

Thank you for your editorials. I agree with most. The others force me to identify my reasons for disagreeing and sometimes to study the subject further.

ROBERT L. GREENE, M.S.

Gresham, OR

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Dear Dr. Schmidt,

The following is a letter which I have sent to the:

Citizens Stamp Advisory Committee
Stamp Division
United States Postal Division
Washington, D.C. 20250

Dear Sir,

On April 6, 1992, the world lost one of its leading citizens, Dr. Isaac Asimov.

Dr. Asimov is perhaps best known for his prodigious output of science fiction. However, this is not the half of his influence. His remarkable gift for being able to make writing *interesting* while not diluting the *content* of what he was writing has led him to write some of the best books on a wide range of subjects. His nonfiction works include books on everything from science to Shakespeare, from math to Milton.

In addition to his literary influence, Dr. Asimov was a man of remarkable character. By all accounts he stood for the virtues of education, tolerance, compassion, and humor, and against the vices of ignorance, bigotry, brutality, and cheerlessness.

The world has lost a great writer, teacher, and human being. It is only fitting that the United States of America honor him with his own commemorative postage stamp.

Thank you for your consideration in this matter.

I hope that you will print this and urge all of your readers to send their own letters and petitions to the post office. It is only fitting that the late Dr. Asimov be honored in this fashion.

If anyone has questions, comments, or needs more information, send a SASE to:

Isaac Asimov Memorial Stamp
c/o Stephen K. Halter
720 Boyleston
Leesburg, Fl. 32748

STEPHEN K. HALTER ■

Analog Science Fiction and Fact has moved! Please send any editorial or advertising material to our new address:

1540 Broadway
New York, NY 10036

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

UPCOMING EVENTS Anthony Lewis

7-9 May

MAGIC CARPET CON 1 (Georgia area SF conference) at Holiday Inn, Dalton, Ga. Guests of Honor: Andre Norton, Susan Shwartz, P.M. Griffin; MC: Steve Vance; Artist Guests of Honor: Mark Poole and Mary Hanson-Roberts. Registration—$20 until 28 February, $25 thereafter and at the door. Info: Magic Carpet Con 1, PO Box 678, Rocky Face GA 30740. (706) 226-5126

14-16 May

Stargazing Contraption (Michigan area SF conference) at the Somerset Inn, Troy, Mich. Guest of Honor—C.J. Cherryh; Fan Guest of Honor: Marty Burke: Special Filk Guests: Barry & Sally Childs Heltons, Tom Smith, Mary Ellen Wessels. Registration—$15 until 15 March, $20 thereafter and at the door. Info: Contraption, PO Box 2285, Ann Arbor MI 48106. (303) 261-3502 or 595-4084.

28-30 May

CONQUEST 24 (Kansas City area SF conference) at Park Place Hotel, Kansas City, Mo. Guest of Honor: James P. Hogan, TM: Steven Gould; Artist Guest of Honor: Nick Smith; Fan Guest of Honor: Parris. Info: ConQuesT 24, Box 36212, Kansas City MO 64111.

7-11 August

The Asimov Seminar at The Rensselaerville Institute. This year's topic is "First Contact: The Human Impact" —seminars will consider the reaction of human beings to alien contact. Seminar advisors will be headed by Ben Bova. Info: The Asimov Seminar, The Rensselaerville Institute, Rensselaerville NY 12147. (609) 629-3732 [Don McGrain]

2-6 September

CONFRANCISCO (51st World Science Fiction Convention) at Parc 55, ANA Hotels, Moskone Centre, San Francisco, Calif. Guest of Honor —Larry Niven; Artist Guest of Honor —Alicia Austin; Fan Guests of Honor —Tom Digby and jan howard finder, MC—Guy Gavriel Kay. Registration—$85 adult/$30 child until 30 September 1992, Supporting—$25. This is the SF universe's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition—the works. Join now and get to nominate and vote for the Hugo Awards and the John W. Campbell Award for Best New Writer. Info: 712 Bancroft Rd, #1993, Walnut Creek CA 94598. (510) 945-1993. CompuServe 72377,3623.

You can send me e-mail about your convention—A.LEWIS20 on the GEnie™ network. When calling conventions for information—do not call collect.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

OVER 50% OFF DURING OUR FIRST ANTHOLOGY WAREHOUSE SALE!

Our warehouse is full -- full of classic science fiction anthologies from **Analog Science Fiction & Fact** and **Asimov's Science Fiction** magazines. We need to make room for new books -- that's why we're having our anthology warehouse sale. For only $17.95 plus $3.00 postage and handling, we will send you an assortment of 9 classic science fiction anthologies. That's less than $2.00 a book and less than half the original price.

Please send your check or money order for $20.95 (no COD's please) to:

Science Fiction Anthologies
P.O. Box 40
Vernon, NJ 07462

Please be sure to include your name and address.

While we cannot accommodate requests for specific anthologies, we guarantee that you will be delighted with your surprise assortment. Also, at this great price, these anthologies will make wonderful gifts for your science-fiction-loving friends.

Allow 6-8 weeks for delivery. Available only in U.S. MVNG-5

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

MAIL ORDER MALL

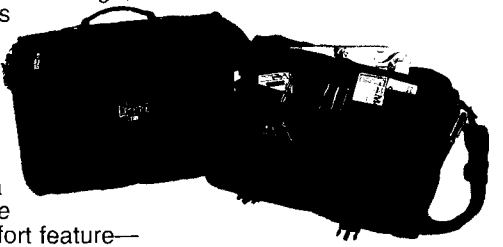
CALL TOLL FREE 1-800-722-9999

▼THE MAGICAL SPARE BED

It's almost like pulling an extra bed out of a hat. Unlike most spare beds that gobble up storage space and are unwieldy to move, this one rolls down to fit a 36"-long, 3"-diameter canvas case, to stash in a closet corner, car trunk, camper, anywhere. Yet it unrolls in minutes to a full-size 27"x73" bed that will even accommodate 6-footers. The secret's in the inventive construction: a cotton canvas sling is supported on laminated steel legs for cushioning and stability on rough ground. Toss the carrying strap over your shoulder and go—camping, beach, poolside, the 10" legs keep it off damp ground and sand. This bed is indispensable at home, country home, dorm—even for kids in motel rooms. A superb value at $61.98 ($12.25) #A1931.

▼EVERYTHING BAG—BY LOCOMOTOR

People on the go always have so much to carry around, but the expandable portfolio bag by Locomotor makes it a snap to keep everything in place. This roomy (17"x14") bag is constructed of tough, water-resistant black canvas material and features eleven spacious extra pockets (2 with zippers) and 4 slots for pens. Plus, a unique zipper design enables the bag's main compartment to expand to more than double its normal width—to a full seven inches. Adjustable wide shoulder strap provides a real comfort feature—or carry the bag by the durable handle. This black Locomotor Bag lets you keep it all together whenever you are on the go. #A2057—$26.98 ($5.75).



TO ORDER: Send check with item number for total amounts, plus shipping & handling shown in ( ) payable to **MAIL ORDER MALL** DEPT 053 AN, P.O. Box 3006, Lakewood, N.J. 08701, or call TOLL FREE **1-800-722-9999.** NJ residents add 7% sales tax. We honor MasterCard, Visa, and American Express. Sorry, no Canadian, foreign, or C.O.D. orders. **30 day money back guarantee for exchange or refund.**

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED